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Attorneys for WASHINGTON GROUP
INTERNATIONAL, INC., A DIVISION OF URS
CORPORATION

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

**IN RE: KATRINA CANAL BREACHES
CONSOLIDATED LITIGATION**

PERTAINS TO MR-GO

**(PENDING IN THE UNITED STATES
DISTRICT COURT FOR THE EASTERN
DISTRICT OF LOUISIANA AS CIVIL
ACTION NO. 05-4182 "K" (2) BEFORE
HON. STANWOOD R. DUVAL, JR.,**

**Case No. MISC. NO. 08-CV-
80007MISC (PJH)**

**DECLARATION OF SHANNON M.
KASLEY IN SUPPORT OF
WASHINGTON GROUP
INTERNATIONAL, INC.'S
MEMORANDUM IN OPPOSITION
TO MOTIONS OF MR-GO PSLC TO
QUASH, AND
CONTEMPORANEOUS MOTION TO
STAY PRODUCTION, AND IN
SUPPORT OF CROSS-MOTION TO
COMPEL COMPLIANCE WITH THE
SUBPOENA**

Date: April 16, 2008
Time: 9:00 a.m.
Courtroom: 3, 17th Floor
Judge: Hon. Phyllis J. Hamilton

I, SHANNON M. KASLEY, declare:

1. I am Of Counsel with the law firm of Jones Day, located at 51 Louisiana Avenue, N.W., Washington, D.C. 20001, (202) 879-3710 (telephone), (202) 626-1700 (facsimile). I am a member in good standing of the bars of New York, New Jersey, and the District of Columbia, and the United States District Court, Eastern District of Louisiana has granted me leave to appear in this matter as a foreign attorney in the above-captioned matter. I submit this Declaration in

1 support of WGII's Opposition to the motions of the MR-GO PSLC to quash WGII's January 29,
2 2008 Subpoena for the Production of Documents to Robert G. Bea, a professor in the UC
3 Berkeley Department of Civil and Environmental Engineering and the co-author of reports
4 published by the Independent Levee Investigation Team ("ILIT"), led by the University of
5 California at Berkeley ("UC-Berkeley") and funded in part by the University of California at
6 Berkeley Center for Technology Research in the Interest of Society ("CITRIS") ("Subpoena" or
7 "Bea Subpoena"), and for contemporaneous motion to stay production. I also submit this
8 Declaration in support of WGII's Cross-Motion to Compel Robert Bea to Comply with the
9 Subpoena. I have personal knowledge of the matters stated in this declaration. Jones Day
10 represents Defendant Washington Group International, Inc. ("WGII") in the above-captioned
11 matter. If called upon to do so, I could and would testify to all matters set forth herein.

12 2. Attached as Exhibit A is a true and correct copy of WGII's January 29, 2008
13 Federal Rule of Civil Procedure 45 Subpoena for the Production of Documents to Robert G. Bea,
14 that WGII caused to be served in connection with the Barge category of cases currently pending
15 in the United States District Court for the Eastern District of Louisiana in the *In re Katrina Canal*
16 *Breaches Consolidated Litigation* matter (Civil Action No. 05-4182 E.D. La.) ("*In re Katrina*").

17 3. Attached as Exhibit B is a true and correct copy of WGII's November 19, 2007
18 Federal Rule of Civil Procedure 45 Subpoena for the Production of Documents to the
19 Independent Levee Investigation Team, led by the University of California at Berkeley and
20 funded in part by the University of California at Berkeley Center for Technology Research in the
21 Interest of Society, that WGII caused to be served in connection with the MR-GO category of
22 cases currently pending in the United States District Court for the Eastern District of Louisiana in
23 *In re Katrina*.

24 4. Attached as Exhibit C is a true and correct copy of a February 12, 2008 letter from
25 C. Patti to A. Agenbroad.

26 5. Attached as Exhibit D is a true and correct copy of a February 19, 2008 letter from
27 C. Patti to A. Agenbroad.
28

1 6. Attached as Exhibit E is a true and correct copy of a February 15, 2008 e-mail
2 from C. Patti to S. Kasley.

3 7. Attached as Exhibit F is a true and correct copy of excerpts from the November 19,
4 2007 Deposition Transcript of Robert G. Bea.

5 8. Attached as Exhibit G is a true and correct copy of excerpts from MR-GO Master
6 Consolidated Class Action Complaint at ¶¶ 40-45.

7 9. Attached as Exhibit H is a true and correct copy of excerpts from Plaintiffs'
8 Response to MRGO Defendants' First Set of Joint Interrogatories, Requests for Production of
9 Documents and Requests for Admissions to Plaintiffs Regarding Common Liability Issues at
10 Response to Interrogatory Nos. 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 22, 23, 25, 26, 27, 28, 29,
11 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, and 43; and Response to Document Request Nos. 1,
12 4, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 24, 26, 27, 28, 29, 31, 32, 33, 34, 35, 38,
13 47, 48, 49, 53, 54, 55, 56, 57, 58, 60, 61, and 62.

14 10. Attached as Exhibit I is a true and correct copy of excerpts from the ILIT July 31,
15 2006 Final Report, co-authored by Robert G. Bea.

16 11. Attached as Exhibit J is a true and correct copy of Responses to Subpoena
17 Requiring the Production of Documents Dated November 19, 2007.

18 12. Attached as Exhibit K is a true and correct copy of a June 22, 2006 R. Bea e-mail
19 to M.L. McElwe, Sr..

20 13. Attached as Exhibit L is a true and correct copy of the February 18, 2008
21 Declaration of Raymond B. Seed, submitted to this Court in connection with UC-Berkeley's
22 opposition to WGII's cross-motion to compel UC-Berkeley to comply with WGII's November 19,
23 2007 Federal Rule of Civil Procedure 45 Subpoena for the Production of Documents to the
24 Independent Levee Investigation Team, led by the University of California at Berkeley and
25 funded in part by the University of California at Berkeley Center for Technology Research in the
26 Interest of Society, that WGII caused to be served in connection with the MR-GO category of
27 cases currently pending in the United States District Court for the Eastern District of Louisiana in
28 *In re Katrina*.

1 I declare under penalty of perjury under the laws of the United States and California that
2 the foregoing is true and correct. Executed this 28th day of February, 2008 at Washington,
3 District of Columbia.

4 /S/ Shannon M. Kasley
5 Shannon M. Kasley

6 I hereby attest that I have on file all holograph signatures for any signatures indicated by a
7 "conformed" signature (/S/) within this efiled document.

8
9 Dated: February 28, 2008

/S/ Aaron L. Agenbroad
10 Aaron L. Agenbroad

EXHIBIT A

AO88 (Rev. 12/06) Subpoena in a Civil Case

Issued by the
UNITED STATES DISTRICT COURT

Northern

DISTRICT OF

California

In Re: KATRINA CANAL BREACHES
 CONSOLIDATED LITIGATION
 V.

SUBPOENA IN A CIVIL CASE

Pertains to: BARGE

Case Number:¹ 05-4182 "K" (2)

TO: Robert G. Bea
 212 McLaughlin Hall
 University of California at Berkeley
 Berkeley, CA 94720-1712

(pending in the United States
 District Court for the Eastern
 District of Louisiana before the
 Hon. Stanwood R. Duval, Jr.)

- ☐ YOU ARE COMMANDED to appear in the United States District court at the place, date, and time specified below to testify in the above case.

PLACE OF TESTIMONY	COURTROOM
	DATE AND TIME

- ☐ YOU ARE COMMANDED to appear at the place, date, and time specified below to testify at the taking of a deposition in the above case.

PLACE OF DEPOSITION	DATE AND TIME
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- ☒ YOU ARE COMMANDED to produce and permit inspection and copying of the following documents or objects at the place, date, and time specified below (list documents or objects):


See attached Schedule A.

PLACE	DATE AND TIME
Jones Day 555 California Street, 26th Floor, San Francisco, CA 94104-1500	2/29/2008 10:00 am

- ☐ YOU ARE COMMANDED to permit inspection of the following premises at the date and time specified below.

PREMISES	DATE AND TIME
----------	---------------

Any organization not a party to this suit that is subpoenaed for the taking of a deposition shall designate one or more officers, directors, or managing agents, or other persons who consent to testify on its behalf, and may set forth, for each person designated, the matters on which the person will testify. Federal Rules of Civil Procedure, 30(b)(6).

ISSUING OFFICER'S SIGNATURE AND TITLE (INDICATE IF ATTORNEY FOR PLAINTIFF OR DEFENDANT)	DATE
	1/29/08

ISSUING OFFICER'S NAME, ADDRESS AND PHONE NUMBER

Aaron L. Agenbroad, Jones Day, 555 California Street, 26th Floor, San Francisco, CA 94104-1500, (415-626-3939),
 Counsel for Washington Group International, Inc.

(See Rule 45, Federal Rules of Civil Procedure, Subdivisions (c), (d), and (e), on next page)

¹ If action is pending in district other than district of issuance, state district under case number.

B 255 (11/91) (cont.)

PROOF OF SERVICE

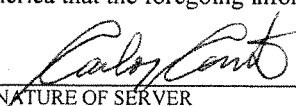
SERVED DATE 01-30-08 AT 1:40PM	PLACE ROBERT G. BEA 212 MCLAUGHLIN HALL UNIVERSITY OF CALIFORNIA AT BERKELEY BERKELEY, CA 94720
SERVED ON (PRINT NAME) ROBERT G. BEA	MANNER OF SERVICE PERSONAL SERVICE
SERVED BY (PRINT NAME) CARLOS CASTRO	TITLE PROCESS SERVER

DECLARATION OF SERVER

I declare under penalty of perjury under the laws of the United States of America that the foregoing information contained in the Proof of Service is true and correct.

Executed on JANUARY 30, 2008
DATE

REF: 3011910
NATIONWIDE LEGAL, INC.
CARLOS CASTRO
REG. NUMBER: 417
SAN FRANCISCO COUNTY


SIGNATURE OF SERVER

1255 POST STREET, SUITE #500
ADDRESS OF SERVER

SAN FRANCISCO, CALIFORNIA 94109

Rule 45, Federal Rules of Civil Procedure, Parts C & D:
(C) PROTECTION OF PERSON SUBJECT TO SUBPOENAS.

(1) A party or an attorney responsible for the issuance and service of a subpoena shall take responsible steps to avoid imposing undue burden or expense on a person subject to that subpoena. The court on behalf of which the subpoena was issued shall enforce this duty and impose upon the party or attorney in breach of this duty an appropriate sanction which may include, but is not limited to, lost earnings and and reasonable attorney's fees

(2) (A) A person commanded to produce and permit inspection and copying designated books, papers, documents or tangible things, or inspection of premises need not appear in person at the place of production or inspection unless commanded to appear for deposition, hearing or trial.

(B) Subject to paragraph (d) (2) of this rule, a person commanded to produce and permit inspection and copying may, within 14 days after service of subpoena or before the time specified for compliance if such time is less than 14 days after service, serve upon the party or attorney designated in the subpoena written objection to inspection or copying of any or all of the designated materials or of the premises. If objection is made, the party serving the subpoena shall not be entitled to inspect or copy materials or inspect the premises except pursuant to an order of the court by which the subpoena was issued. If objection has been made, the party serving the subpoena may, upon notice to the person commanded to produce, move at any time for an order to compel the production. Such an order to compel production shall protect any person who is not a party or an officer of the party from significant expense resulting from the inspection and copying commanded.

(3) (A) On timely motion, the court by which a subpoena was issued shall quash or modify the subpoena if it

(i) fails to allow for reasonable time for compliance;

(ii) requires a person who is not a party or an officer of a party to travel to a place more than 100 miles from the place where that person resides, is employed or regularly transacts business in

person, except that, subject to the provisions of clause (c) (B) (iii) of this rule, such a person may in order to attend trial be commanded to travel from any such place within the state in which the trial is held, or (iii) requires disclosure of privileged or other protected matter and no exception or waiver applies, or

(iv) subjects a person to undue burden.

(B) if a subpoena

(i) requires disclosure of a trade secret or other confidential research, development, or commercial information, or

(ii) requires disclosure of an unretained expert's opinion or information not describing specific events or occurrences in dispute and resulting from the expert's study made not at the request of any party, or

(iii) requires a person who is not a party or an officer of a party to incur substantial expense to travel more than 100 miles to attend trial, the court may, to protect a person subject to or affected by the subpoena, quash or modify the subpoena, or, if the party in whose behalf the subpoena is issued shows a substantial need for the testimony or material that cannot be otherwise met without undue hardship and assures that the person to whom the subpoena is addressed will be reasonably compensated, the court may order appearances or production only upon specified conditions.

(d) DUTIES IN RESPONDING TO SUBPOENA

(1) A person responding to a subpoena to produce documents shall produce them as they are kept in the usual course of business or shall organize and label them to correspond with the categories in the demand.

(2) When the information subject to a subpoena is withheld on a claim that is privileged or subject to protection as trial preparation materials, the claim shall be made expressly and shall be supported by a description of the nature of the documents, communications, or things not produced that is sufficient to enable the demanding party to contest the claim.

SCHEDULE A

This subpoena is to be answered in accordance with the provisions of Federal Rule of Civil Procedure 45(d)(1) and in accordance with the following definitions and instructions:

A. Definitions

The terms set forth below are defined as follows unless otherwise stated:

1. "Document(s)," "data," "report(s)," "information," and "material(s)" shall be used in the broadest sense contemplated by Federal Rule of Civil Procedure 34, and shall include any writing of any kind, including, without limitation, any written, printed, taped, electronically or digitally encoded, graphic or other information, including, without limitation, originals, identical copies, translations and drafts thereof and all copies bearing notations and marks not found on the original. "Document(s)," "data," "report(s)," "information," and "material(s)" includes, without limitation, affidavits; agreements; analyses; appointment books; articles from publications; workpapers of any kind; books; calendars; charts; checks (canceled or uncanceled); check stubs; communications; computer disks, print outs, tapes; confirmations; contracts; correspondence; credit card receipts; desk calendars; deskpads; diaries; diskettes; drafts; electronic mail; estimates; evaluations; facsimiles; files; filings; forms; graphs; invoices; journals; ledgers; letters; lists; maps; meeting minutes; memoranda; notations; notes; opinions; orders; pamphlets; papers; pictures; press releases; publications; receipts; recordings of conferences, conversations, or meetings; reports; statements; statistical records; studies; summaries; tabulations; telegrams; telephone records; telex messages; transcripts; understandings; videotapes; vouchers; and sheets or things similar to any of the foregoing however denominated.

"Document(s)," "data," "report(s)," "information," and "material(s)" further means any document now or at any time in the possession, custody or control of the entity to whom these

Requests are directed (together with any predecessors, successors, affiliates, subsidiaries or divisions thereof, and their officers, directors, employees, agents and attorneys). Without limiting the term "control" as used in the preceding sentence, a person is deemed to be in control of a document if the person has the right to secure the document or a copy thereof from another person having actual possession thereof.

2. "Concerning," "regarding," "relating to," and "demonstrating" means referring to, describing, discussing, evidencing, or constituting.

3. "ILIT" means the Independent Levee Investigation Team, led by the University of California at Berkeley and funded in part by the University of California at Berkeley's Center for Technology Research in the Interest of Society ("CITRIS"); any of ILIT's members, employees, affiliates, representatives, advisors, agents, attorneys or associates; or any other person acting on behalf of the ILIT in any capacity.

4. "You," or "Your" means Robert G. Bea, a professor in the UC Berkeley Department of Civil and Environmental Engineering and the co-author of the Report published by the Independent Levee Investigation Team ("ILIT"), led by the University of California at Berkeley and funded in part by the University of California at Berkeley Center for Technology Research in the Interest of Society ("CITRIS"), and any agents, designees, representatives or other persons acting on your behalf or at your request. The subpoena is directed to Prof. Bea as a member of ILIT and the co-author of the ILIT Report and seeks only those documents from him in his capacity as such, and is not directed to Prof. Bea, and therefore does not seek documents from him, as an expert retained by counsel as of March, 2007 in connection with the *In re Katrina Canal Breaches Consol. Litig.*

5. "Person" or "individual" means any natural person or any business, legal, or government entity or association.

6. "Meeting" means the contemporaneous presence of any natural persons, whether or not such presence occurred by chance or was prearranged and whether or not the meeting was formal or informal or occurred in connection with some other activity, and whether or not the meeting took place via telephonic, telegraphic video or in-person, or otherwise.

7. "Including" means including without limitation.

8. "Identify," when used in reference to a person, means to state his, her, or its full name, present or last known address, and telephone number.

9. Unless otherwise set forth specifically in a request, the relevant time period applicable to this subpoena is August 29, 2005 through and including the date of your document production.

10. "Hurricane Katrina" means the hurricane that made landfall along the Mississippi Gulf Coast to the east of the New Orleans, Louisiana area on or about the morning of August 29, 2005.

11. "WGII" means Washington Group International, Inc., a division of URS Corporation.

12. "Canal" shall include the waterway itself, as well as any and all adjacent flood control structures and/or spoil banks, including levees and floodwalls.

13. "MRGO" means the Mississippi River Gulf Outlet Navigation Canal, as well as any and all adjacent flood control structures and/or spoil banks, including levees and floodwalls.

14. "GIWW" means the Gulf Intracoastal Waterway, as well as any and all adjacent flood control structures and/or spoil banks, including levees and floodwalls.

15. "Industrial Canal" means the Inner Harbor Navigation Canal, also referred to locally as the Industrial Canal, that connects Lake Pontchartrain, the Mississippi River, and the segment of the GIWW between New Orleans East and St. Bernard Parish.

16. "Breach(es)" means the failure, during and/or immediately after Hurricane Katrina, other than from overtopping, of a levee, berm, spoil bank, levee wall, and/or flood wall resulting in the release of floodwater.

17. "Adjacent to" means next to, along, near, or on/or near the boundary of property or a specific area.

18. "East Bank Industrial Area" ("EBIA") means the 32-acre parcel of land in New Orleans bordered by Florida and Claiborne Avenues to the north and south along the eastern edge of the Industrial Canal and bounded on the east by the levee and/or floodwall.

B. Instructions

1. The documents sought in these Requests include all documents in your possession, custody or control. Unless otherwise indicated, these Requests seek all documents generated or received by you during the Relevant Period.

2. You shall produce all documents in the manner in which they are maintained in the usual course of your business and/or you shall organize and label the documents to correspond with the categories in these Requests. A Request for a document shall be deemed to include a request for any and all file folders in which the document was contained, transmittal sheets, cover letters, exhibits, enclosures, or attachments to the document in addition to the document itself.

3. Each document withheld from production based upon privilege or any similar claim shall be identified by: (a) the type of document; (b) the general subject matter of the

document; (c) the date of the document; and (d) such other information as is sufficient to identify the document, including, without limitation, the author of the document, the relationship of the author and any recipient to each other. The nature of each claim of privilege shall be set forth in sufficient detail to enable a determination to be made concerning the reasons for the privilege claim.

4. Documents attached to each other should not be separated.

5. Documents not otherwise responsive to these Requests shall be produced if such documents mention, discuss, refer to, or explain the documents that are called for by these Requests.

6. If any document within the scope of these Requests has been destroyed, that document shall be identified, including, without limitation, identification of its author(s), intended or unintended recipient(s), addressee(s), intended or unintended recipients of blind copies, date and subject matter. The circumstances of such destruction shall be set forth, and any documents relating to such destruction shall be produced.

7. In producing documents and other materials, you are requested to furnish all documents or things in your possession, custody or control, regardless of whether such documents or materials are possessed directly by you or your directors, officers, agents, employees, representatives, subsidiaries, managing agents, affiliates, accountants or investigators, or by your attorney or their agents, employees, representatives or investigations.

8. If you object to any part of any request, you shall state fully the nature of the objection. Notwithstanding any objections, you shall nonetheless comply fully with the other parts of the request not objected to.

9. Each Request shall be construed independently and not with reference to any other document Request for the purpose of limitation.
10. "All" and "each" shall be construed as "all and each."
11. The connectives "and" and "or" shall be construed either disjunctively or conjunctively as necessary to bring within the scope of the discovery Request all responses that might otherwise be construed to be outside the scope.
12. The use of the singular form of any word includes the plural and vice versa. The past tense shall include the present tense and vice versa.
13. The documents shall be produced in full, without abbreviation or expurgation.

SPECIFICATIONS OF DOCUMENTS TO BE PRODUCED

As indicated above, the Specifications of Documents to be Produced are directed to Prof. Bea as a member of ILIT and the co-author of the ILIT Report and seeks only those documents from him in his capacity as such, and is not directed to Prof. Bea, and therefore does not seek documents from him, as an expert retained by counsel as of March, 2007 in connection with the *In re Katrina Canal Breaches Consol. Litig.*:

- 1) documents, including statements of eyewitnesses or other interviews provided to you or any other member of ILIT, reflecting instances in which residents of the Lower Ninth Ward in New Orleans, Louisiana or others encountered difficulty dewatering excavations in or adjacent to the EBIA
- 2) documents provided to you or any other member of ILIT reflecting reports of underseepage and/or ponding of water along or adjacent to the Industrial Canal at the west edge of the Lower Ninth Ward in New Orleans
- 3) documents, including statements or other interviews provided to you or any other member of ILIT, reflecting complaints or other expressions of concern by residents of the Lower Ninth Ward and St. Bernard Parish concerning underseepage and/or ponding of water along or adjacent to the Industrial Canal, including who made those complaints, when those complaints were made, and to whom those complaints were made

4) documents supporting the conclusion ILIT made in Chapter 11, page 11-5 of the ILIT July 31, 2006 Final Report that the "main breaches that were the principal source of flooding for both the St. Bernard/Lower Ninth Ward protected area and the New Orleans East protected area were the levee frontages facing 'Lake' Borgne (which is actually a bay, as it is connected directly to the Gulf of Mexico)"

5) documents provided to you or any other member of ILIT reflecting that WGII was made aware or warned of underseepage of water along or adjacent to the Industrial Canal, particularly in the EBIA

6) documents provided to you or any other member of ILIT reflecting that any other person (including, but not limited to any natural person or any business, legal, or government entity or association) was made aware or warned of underseepage of water along or adjacent to the Industrial Canal, particularly in the EBIA

7) documents requests or other requests for information from you or any other member of ILIT to McElwee Brothers, Inc. or any other individual in connection with your investigation of Hurricane Katrina and its effects in the Industrial Canal and your preparation of the ILIT July 31, 2006 Final Report, or any interim drafts thereof

8) documents provided to you or any other member of ILIT by McElwee Brothers, Inc. or any other individual in connection with your investigation of Hurricane Katrina and its effects in the Industrial Canal and your preparation of the ILIT July 31, 2006 Final Report, or any interim drafts thereof

9) communications between you or any other member of ILIT with McElwee Brothers, Inc., Melvin M.L. McElwee, Sr., Sylvia Hurst, and/or any person acting on behalf of McElwee Brothers, Inc.

10) documents reflecting instances of disagreement among any members of the ILIT regarding conclusions in the ILIT July 31, 2006 Final Report, or any interim drafts thereof

11) documents reflecting theories examined or investigated by you or any other member of ILIT surrounding the breaches of the levees and flood walls along or adjacent to the EBIA in the Industrial Canal at the west edge of the Lower Ninth Ward in New Orleans

12) documents reflecting theories examined or investigated by you or any other member of ILIT that a runaway barge, i.e. a barge that had broken free of its moorings, caused the breaches of the levees and flood walls along or adjacent to the EBIA in the Industrial Canal at the west edge of the Lower Ninth Ward in New Orleans

13) documents supporting the conclusion ILIT made in Chapter 6, page 6-7 of the ILIT July 31, 2006 Final Report that "the barge [ING4727] slipped its moorings and was eventually drawn in through a breach that was already well developed"

14) documents provided to you or any other member of ILIT reflecting or evidencing the theory that barge ING4727, or any other barge, caused or contributed to the breaches of the levees and flood walls along or adjacent to the EBIA in the Industrial Canal at the west edge of the Lower Ninth Ward in New Orleans

15) documents reflecting the number of visits you made to New Orleans in connection with the ILIT Hurricane Katrina investigation, including, but not limited to, time sheets or similar documents you used to document the time you spent in New Orleans in connection with the ILIT Hurricane Katrina investigation

16) documents reflecting what portions of the ILIT Hurricane Katrina investigation were funded by CITRIS

17) photographs taken by you or any other member of ILIT in connection with ILIT's investigation of Hurricane Katrina, particularly in the Industrial Canal and the EBIA

18) documents describing, reflecting, and/or defining the legal status, organization, and funding sources of ILIT

19) copies of videos, webcasts, podcasts or other public interviews you have given concerning the ILIT Hurricane Katrina investigation

CERTIFICATE OF SERVICE

I hereby certify that a copy of the above and foregoing Notice of Subpoena Requiring the Production of Documents and Schedule A has been served upon all counsel of record through the Court's CM/ECF electronic filing system or by placing same in the United States mail, postage prepaid and properly addressed, this 30th day of January, 2008.

/s/ Heather S. Lonian

Heather S. Lonian

EXHIBIT B

AO88 (Rev. 12/06) Subpoena in a Civil Case

Issued by the
UNITED STATES DISTRICT COURT

Northern

DISTRICT OF

California

In Re: KATRINA CANAL BREACHES
 CONSOLIDATED LITIGATION
 V.

SUBPOENA IN A CIVIL CASE

Pertains to: MRGO

Case Number:¹ 05-4182 "K" (2)

TO: Independent Levee Investigation Team
 University of California at Berkeley
 Center for Technology Research in the Interest of Society
 281 Hearst Memorial Mining Building, UC Berkeley
 Berkeley, CA 94720-1764

(pending in the United States
 District Court for the Eastern
 District of Louisiana before the
 Hon. Stanwood R. Duval, Jr.)

- ☐ YOU ARE COMMANDED to appear in the United States District court at the place, date, and time specified below to testify in the above case.

PLACE OF TESTIMONY

COURTROOM

DATE AND TIME

- ☐ YOU ARE COMMANDED to appear at the place, date, and time specified below to testify at the taking of a deposition in the above case.

PLACE OF DEPOSITION

DATE AND TIME

- ☒ YOU ARE COMMANDED to produce and permit inspection and copying of the following documents or objects at the place, date, and time specified below (list documents or objects):

See attached Schedule A.

PLACE Jones Day
 555 California Street, 26th Floor, San Francisco, CA 94104-1500

DATE AND TIME
 12/19/2007 10:00 am

- ☐ YOU ARE COMMANDED to permit inspection of the following premises at the date and time specified below.

PREMISES

DATE AND TIME

Any organization not a party to this suit that is subpoenaed for the taking of a deposition shall designate one or more officers, directors, or managing agents, or other persons who consent to testify on its behalf, and may set forth, for each person designated, the matters on which the person will testify. Federal Rules of Civil Procedure, 30(b)(6).

ISSUING OFFICER'S SIGNATURE AND TITLE (INDICATE IF ATTORNEY FOR PLAINTIFF OR DEFENDANT)

DATE



11/19/2007

ISSUING OFFICER'S NAME, ADDRESS AND PHONE NUMBER

Aaron L. Agenbroad, Jones Day, 555 California Street, 26th Floor, San Francisco, CA 94104-1500, (415-626-3939)
 Counsel for Washington Group International, Inc.

(See Rule 45, Federal Rules of Civil Procedure, Subdivisions (c), (d), and (e), on next page)

¹ If action is pending in district other than district of issuance, state district under case number.

B 255 (11/91) (cont.)

PROOF OF SERVICE

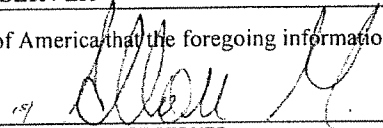
DATE 11-19-07 AT 11:40AM	PLACE INDEPENDENT LEVEE INVESTIGATION TEAM UNIVERSITY OF CALIFORNIA AT BERKELEY CENTER FOR TECHNOLOGY RESEARCH IN THE INTEREST OF SOCIETY 281 HEARST MEMORIAL MINING BUILDING, UC BERKELEY BERKELEY, CA 94720-1764
SERVED	
SERVED ON (PRINT NAME) FORREST RULISON MONROE, STUDENT ASSISTANT AUTHORIZED TO ACCEPT LEGAL DOCUMENTS	MANNER OF SERVICE PERSONAL SERVICE
SERVED BY (PRINT NAME) ALLAN MENDIETA	TITLE PROCESS SERVER

DECLARATION OF SERVER

I declare under penalty of perjury under the laws of the United States of America that the foregoing information contained in the Proof of Service is true and correct.

Executed on NOVEMBER 19, 2007
DATE

REF: 3005611
NATIONWIDE LEGAL, INC.
ALLAN MENDIETA
REG. NUMBER: 1018
SAN FRANCISCO COUNTY


SIGNATURE OF SERVER

1255 POST STREET, SUITE #500
ADDRESS OF SERVER

SAN FRANCISCO, CALIFORNIA 94109

Rule 45, Federal Rules of Civil Procedure, Parts C & D:
(C) PROTECTION OF PERSON SUBJECT TO SUBPOENAS.

(1) A party or an attorney responsible for the issuance and service of a subpoena shall take responsible steps to avoid imposing undue burden or expense on a person subject to that subpoena. The court on behalf of which the subpoena was issued shall enforce this duty and impose upon the party or attorney in breach of this duty an appropriate sanction which may include, but is not limited to, lost earnings and and reasonable attorney's fees

(2) (A) A person commanded to produce and permit inspection and copying designated books, papers, documents or tangible things, or inspection of premises need not appear in person at the place of production or inspection unless commanded to appear for deposition, hearing or trial.

(B) Subject to paragraph (d) (2) of this rule, a person commanded to produce and permit inspection and copying may, within 14 days after service of subpoena or before the time specified for compliance if such time is less than 14 days after service, serve upon the party or attorney designated in the subpoena written objection to inspection or copying of any or all of the designated materials or of the premises. If objection is made, the party serving the subpoena shall not be entitled to inspect or copy materials or inspect the premises except pursuant to an order of the court by which the subpoena was issued. If objection has been made, the party serving the subpoena may, upon notice to the person commanded to produce, move at any time for an order to compel the production. Such an order to compel production shall protect any person who is not a party or an officer of the party from significant expense resulting from the inspection and copying commanded.

(3) (A) On timely motion, the court by which a subpoena was issued shall quash or modify the subpoena if it

(i) fails to allow for reasonable time for compliance;

(ii) requires a person who is not a party or an officer of a party to travel to a place more than 100 miles from the place where that person resides, is employed or regularly transacts business in

person, except that, subject to the provisions of clause (c) (B) (iii) of this rule, such a person may in order to attend trial be commanded to travel from any such place within the state in which the trial is held, or (iii) requires disclosure of privileged or other protected matter and no exception or waiver applies, or (iv) subjects a person to undue burden.

(B) if a subpoena

(i) requires disclosure of a trade secret or other confidential research, development, or commercial information, or (ii) requires disclosure of an unretained expert's opinion or information not describing specific events or occurrences in dispute and resulting from the expert's study made not at the request of any party, or

(iii) requires a person who is not a party or an officer of a party to incur substantial expense to travel more than 100 miles to attend trial, the court may, to protect a person subject to or affected by the subpoena, quash or modify the subpoena, or, if the party in whose behalf the subpoena is issued shows a substantial need for the testimony or material that cannot be otherwise met without undue hardship and assures that the person to whom the subpoena is addressed will be reasonably compensated, the court may order appearances or production only upon specified conditions.

(d) DUTIES IN RESPONDING TO SUBPOENA

(1) A person responding to a subpoena to produce documents shall produce them as they are kept in the usual course of business or shall organize and label them to correspond with the categories in the demand.

(2) When the information subject to a subpoena is withheld on a claim that is privileged or subject to protection as trial preparation materials, the claim shall be made expressly and shall be supported by a description of the nature of the documents, communications, or things not produced that is sufficient to enable the demanding party to contest the claim.

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF LOUISIANA

IN RE: KATRINA CANAL BREACHES
CONSOLIDATED LITIGATION

CIVIL ACTION

NO. 05-4182 "K" (2)

PERTAINS TO: MRGO

JUDGE DUVAL
MAG. WILKINSON

**NOTICE OF SUBPOENA REQUIRING THE
PRODUCTION OF DOCUMENTS**

Pursuant to the Court's Case Management and Scheduling Order No. 4, entered March 1, 2007 (Docket No. 3299), and as subsequently amended ("CMO No. 4"), PLEASE TAKE NOTICE that pursuant to Rule 45 of the Federal Rules of Civil Procedure, Defendant Washington Group International, Inc. ("WGII") has caused a subpoena *duces tecum* ("subpoena") to be issued by the United States District Court for the Northern District of California upon the Independent Levee Investigation Team ("ILIT"), led by the University of California at Berkeley and funded in part by the University of California at Berkeley Center for Technology Research in the Interest of Society ("CITRIS"). The Subpoena has been directed to CITRIS, located at 281 Hearst Memorial Mining Building #1764, University of California, Berkeley, Berkeley, California 94720-1764.

The subpoena requires the production of documents as described and designated in the attached Schedule A, at 10:00 a.m., December 19, 2007, at the offices of Jones Day, 555 California Street, 26th Floor, San Francisco, California 94104-1500.

The notice, service, and enforcement of this subpoena is without prejudice to the pending

motion of WGII to dismiss, or any other similar motion to be filed by WGII, and shall not be deemed a waiver by WGII of any right.

Dated: November 19, 2007

Respectfully submitted,

/s/ William D. Treeby
William D. Treeby, 12901
Carmelite M. Bertaut, 3054
Heather S. Lonian, 29956
Of
Stone Pigman Walther Wittmann L.L.C.
546 Carondelet Street
New Orleans, Louisiana 70130
Telephone: (504) 581-3200
Facsimile: (504) 581-3361

Attorneys for Washington Group
International, Inc.

Of counsel
Adrian Wager-Zito
Jones Day
51 Louisiana Avenue, N.W.
Washington, D.C. 20001-2113
Telephone: (202) 879-4645
Facsimile: (202) 626-1700

SCHEDULE A

This subpoena is to be answered in accordance with the provisions of Federal Rule of Civil Procedure 45(d)(1) and in accordance with the following definitions and instructions:

A. Definitions

The terms set forth below are defined as follows unless otherwise stated:

1. "Document(s)," "data," "report(s)," "information," and "material(s)" shall be used in the broadest sense contemplated by Federal Rule of Civil Procedure 34, and shall include any writing of any kind, including, without limitation, any written, printed, taped, electronically or digitally encoded, graphic or other information, including, without limitation, originals, identical copies, translations and drafts thereof and all copies bearing notations and marks not found on the original. "Document(s)," "data," "report(s)," "information," and "material(s)" includes, without limitation, affidavits; agreements; analyses; appointment books; articles from publications; workpapers of any kind; books; calendars; charts; checks (canceled or uncanceled); check stubs; communications; computer disks, print outs, tapes; confirmations; contracts; correspondence; credit card receipts; desk calendars; deskpads; diaries; diskettes; drafts; electronic mail; estimates; evaluations; facsimiles; files; filings; forms; graphs; invoices; journals; ledgers; letters; lists; maps; meeting minutes; memoranda; notations; notes; opinions; orders; pamphlets; papers; pictures; press releases; publications; receipts; recordings of conferences, conversations, or meetings; reports; statements; statistical records; studies; summaries; tabulations; telegrams; telephone records; telex messages; transcripts; understandings; videotapes; vouchers; and sheets or things similar to any of the foregoing however denominated.

"Document(s)," "data," "report(s)," "information," and "material(s)" further means any document now or at any time in the possession, custody or control of the entity to whom these

Requests are directed (together with any predecessors, successors, affiliates, subsidiaries or divisions thereof, and their officers, directors, employees, agents and attorneys). Without limiting the term "control" as used in the preceding sentence, a person is deemed to be in control of a document if the person has the right to secure the document or a copy thereof from another person having actual possession thereof.

2. "Concerning," "regarding," "relating to," and "demonstrating" means referring to, describing, discussing, evidencing, or constituting.

3. "ILIT" means the Independent Levee Investigation Team, led by the University of California at Berkeley and funded in part by the University of California at Berkeley's Center for Technology Research in the Interest of Society ("CITRIS"); any of ILIT's members, employees, affiliates, representatives, advisors, agents, attorneys or associates; or any other person acting on behalf of the ILIT in any capacity.

4. "You," or "Your" means the ILIT and/or the University of California at Berkeley's Center for Technology Research in the Interest of Society ("CITRIS"), its predecessors, parents, subsidiaries, affiliates, and any of its present or former directors, officers, agents, employees, designees, assignees, representatives or other persons acting on its behalf.

5. "Person" or "individual" means any natural person or any business, legal, or government entity or association.

6. "Meeting" means the contemporaneous presence of any natural persons, whether or not such presence occurred by chance or was prearranged and whether or not the meeting was formal or informal or occurred in connection with some other activity, and whether or not the meeting took place via telephonic, telegraphic video or in-person, or otherwise.

7. "Including" means including without limitation.

8. "Identify," when used in reference to a person, means to state his, her, or its full name, present or last known address, and telephone number.

9. Unless otherwise set forth specifically in a request, the relevant time period applicable to this subpoena is January 1, 1965 through and including the date of your document production.

10. "Hurricane Katrina" means the hurricane that made landfall along the Mississippi Gulf Coast to the east of the New Orleans, Louisiana area on or about the morning of August 29, 2005.

11. "WGII" means Washington Group International, Inc.

12. "Canal" shall include the waterway itself, as well as any and all adjacent flood control structures and/or spoil banks, including levees and floodwalls.

13. "MRGO" means the Mississippi River Gulf Outlet Navigation Canal, as well as any and all adjacent flood control structures and/or spoil banks, including levees and floodwalls.

14. "GIWW" means the Gulf Intracoastal Waterway, as well as any and all adjacent flood control structures and/or spoil banks, including levees and floodwalls.

15. "Industrial Canal" means the Inner Harbor Navigation Canal, also referred to locally as the Industrial Canal, that connects Lake Pontchartrain, the Mississippi River, and the segment of the GIWW between New Orleans East and St. Bernard Parish.

16. "Breach(es)" means the failure, during and/or immediately after Hurricane Katrina, other than from overtopping, of a levee, berm, spoil bank, levee wall, and/or flood wall resulting in the release of floodwater.

17. "Adjacent to" means next to, along, near, or on/or near the boundary of property or a specific area.

18. "East Bank Industrial Area" ("EBIA") means the 32-acre parcel of land in New Orleans bordered by Florida and Claiborne Avenues to the north and south along the eastern edge of the Industrial Canal and bounded on the east by the levee and/or floodwall.

B. Instructions

1. The documents sought in these Requests include all documents in your possession, custody or control. Unless otherwise indicates, these Requests seek all documents generated or received by you during the Relevant Period.

2. You shall produce all documents in the manner in which they are maintained in the usual course of your business and/or you shall organize and label the documents to correspond with the categories in these Requests. A Request for a document shall be deemed to include a request for any and all file folders in which the document was contained, transmittal sheets, cover letters, exhibits, enclosures, or attachments to the document in addition to the document itself.

3. Each document withheld from production based upon privilege or any similar claim shall be identified by: (a) the type of document; (b) the general subject matter of the document; (c) the date of the document; and (d) such other information as is sufficient to identify the document, including, without limitation, the author of the document, the relationship of the author and any recipient to each other. The nature of each claim of privilege shall be set forth in sufficient detail to enable a determination to be made concerning the reasons for the privilege claim.

4. Documents attached to each other should not be separated.

5. Documents not otherwise responsive to these Requests shall be produced if such documents mention, discuss, refer to, or explain the documents that are called for by these Requests.

6. If any document within the scope of these Requests has been destroyed, that document shall be identified, including, without limitation, identification of its author(s), intended or unintended recipient(s), addressee(s), intended or unintended recipients of blind copies, date and subject matter. The circumstances of such destruction shall be set forth, and any documents relating to such destruction shall be produced.

7. In producing documents and other materials, you are requested to furnish all documents or things in your possession, custody or control, regardless of whether such documents or materials are possessed directly by you or your directors, officers, agents, employees, representatives, subsidiaries, managing agents, affiliates, accountants or investigators, or by your attorney or their agents, employees, representatives or investigations.

8. If you object to any part of any request, you shall state fully the nature of the objection. Notwithstanding any objections, you shall nonetheless comply fully with the other parts of the request not objected to.

9. Each Request shall be construed independently and not with reference to any other document Request for the purpose of limitation.

10. "All" and "each" shall be construed as "all and each."

11. The connectives "and" and "or" shall be construed either disjunctively or conjunctively as necessary to bring within the scope of the discovery Request all responses that might otherwise be construed to be outside the scope.

12. The use of the singular form of any word includes the plural and vice versa. The past tense shall include the present tense and vice versa.

13. The documents shall be produced in full, without abbreviation or expurgation.

SPECIFICATIONS OF DOCUMENTS TO BE PRODUCED

1) documents, including statements of eyewitnesses or other interviews provided to ILIT, reflecting instances in which residents of the Lower Ninth Ward in New Orleans, Louisiana or others encountered difficulty dewatering excavations in or near the EBIA

2) documents reflecting reports of underseepage and/or ponding of water along the Industrial Canal at the west edge of the Lower Ninth Ward in New Orleans

3) documents, including statements or other interviews provided to ILIT, reflecting complaints or other expressions of concern by residents of the Lower Ninth Ward and St. Bernard Parish concerning underseepage and/or ponding of water along the Industrial Canal, including who made those complaints, when those complaints were made, and to whom those complaints were made

4) documents supporting the conclusion you made in Chapter 11, page 11-5 of your July 31, 2006 Final Report that the "main breaches that were the principal source of flooding for both the St. Bernard/Lower Ninth Ward protected area and the New Orleans East protected area were the levee frontages facing 'Lake' Borgne (which is actually a bay, as it is connected directly to the Gulf of Mexico)"

5) documents reflecting that WGII was made aware or warned of underseepage of water along the Industrial Canal, particularly in the EBIA

6) documents reflecting that any other person (including, but not limited to any natural person or any business, legal, or government entity or association) was made aware or warned of underseepage of water along the Industrial Canal, particularly in the EBIA

7) documents requests or other requests for information from ILIT to McElwee Brothers, Inc. or any other individual in connection with your investigation of Hurricane Katrina and its effects in the Industrial Canal and your preparation of your July 31, 2006 Final Report, or any interim drafts thereof

8) documents provided to ILIT by McElwee Brothers, Inc. or any other individual in connection with your investigation of Hurricane Katrina and its effects in the Industrial Canal and your preparation of your July 31, 2006 Final Report, or any interim drafts thereof

9) documents reflecting instances of disagreement among any members of the ILIT regarding conclusions in your July 31, 2006 Final Report, or any interim drafts thereof

10) documents reflecting theories examined or investigated by ILIT surrounding the breaches of the levees and flood walls along the EBIA in the Industrial Canal at the west edge of the Lower Ninth Ward in New Orleans

CERTIFICATE OF SERVICE

I hereby certify that a copy of the above and foregoing Notice of Subpoena Requiring the Production of Documents and Schedule A has been served upon all counsel of record through the Court's CM/ECF electronic filing system or by placing same in the United States mail, postage prepaid and properly addressed, this 19th day of November, 2007.

/s/ Heather S. Lonian
Heather S. Lonian

EXHIBIT C

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
OFFICE OF THE GENERAL COUNSEL



1111 Franklin Street, 8th Floor • Oakland, California 94607-5200 • (510) 987-9800 • FAX (510) 987-9757

Charles F. Robinson
VICE PRESIDENT AND GENERAL COUNSEL

Writer's direct line: (510) 987-9739
E-mail: christopher.patti@ucop.edu

February 12, 2008

Aaron L. Agenbroad
Jones Day
555 California Street, 26th Floor
San Francisco, CA 94104-1500

Re: In re Katrina Canal Breaches Litigation

Dear Mr. Agenbroad:

I am making the following objections on behalf of Raymond Seed, Jonathan Bray, and Michael Riemer to the third party subpoenas served on them by Washington Group International, Inc., in this litigation:

The subpoenaed parties object to the extent that the subpoenas call for production of documents relating to personal transactions and travel, such as expense receipts and travel documents, and personal calendars on the grounds that such requests are unreasonably burdensome, an undue invasion of the subpoenaed parties' privacy, not reasonably calculated to lead to the discovery of admissible evidence, and overbroad.

Very truly yours,

A handwritten signature in black ink, appearing to read "Christopher M. Patti".

Christopher M. Patti
University Counsel

lj

172232.1

EXHIBIT D

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
OFFICE OF THE GENERAL COUNSEL



1111 Franklin Street, 8th Floor • Oakland, California 94607-5200 • (510) 987-9800 • FAX (510) 987-9757

Charles F. Robinson
VICE PRESIDENT AND GENERAL COUNSEL

Writer's direct line: (510) 987-9739
E-mail: christopher.patti@ucop.edu

February 19, 2008

Aaron L. Agenbroad
Jones Day
555 California Street, 26th Floor
San Francisco, CA 94104-1500

Re: In re Katrina Canal Breaches Litigation

Dear Mr. Agenbroad:

I am making the following objections on behalf of Juan Pestana to the third party subpoenas served on him by Washington Group International, Inc., in this litigation.

The subpoenaed party objects to the extent that the subpoenas call for production of documents relating to personal transactions and travel, such as expense receipts and travel documents, and personal calendars on the grounds that such requests are unreasonably burdensome, an undue invasion of the subpoenaed party's privacy, not reasonably calculated to lead to the discovery of admissible evidence, and overbroad.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Christopher M. Patti'.

Christopher M. Patti
University Counsel

lj

172563.1

EXHIBIT E



"Christopher Patti"
<Christopher.Patti@ucop.edu>
>

02/15/2008 05:35 PM

To "Shannon M Kasley" <smkasley@JonesDay.com>
cc "Aaron L. Agenbroad" <alagenbroad@JonesDay.com>, "Adrian Wager-Zito" <adrianwagerzito@JonesDay.com>, <wtreeby@stonepigman.com>
bcc

Subject RE: In re Katrina

History:

 This message has been replied to and forwarded.

Shannon,

I apologize for not copying you on the letter to Aaron Agenbroad. I will copy you on future correspondence regarding WGI's subpoenas.

To answer your questions:

1. Professors Seed, Bray, and Riemer do intend to produce all responsive documents (other than those to which they have objected) on or before February 29, 2008, although in the event that some unforeseen circumstance causes delay in their ability to produce by that deadline, I hope you will be courteous in permitting a brief extension.

2. You may serve any motions relating to the subpoenas directed to Professors Seed, Bray or Riemer on me.

Christopher M. Patti
University Counsel
1111 Franklin St., 8th Fl.
Oakland, CA 94607
Tel: (510) 987-9800
Fax: (510) 987-9757

-----Original Message-----

From: Shannon M Kasley [mailto:smkasley@JonesDay.com]
Sent: Friday, February 15, 2008 2:02 PM
To: Christopher Patti
Cc: Aaron L. Agenbroad; Adrian Wager-Zito; wtreeby@stonepigman.com
Subject: In re Katrina

Chris,

Please see the attached.

(See attached file: 2_15_08_Kasley_to_Patti.pdf)

Shannon M. Kasley
JONES DAY
51 Louisiana Avenue, N.W.
Washington, D.C. 20001-2113
202.879.3710
202.626.1700 (fax)

=====
This e-mail (including any attachments) may contain information that is private, confidential, or protected by attorney-client or other privilege.

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EXHIBIT F

BEA, ROBERT GLENN

11/19/2007

Page 1

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF LOUISIANA

IN RE: KATRINA CANAL BREACHES CIVIL ACTION
CONSOLIDATED LITIGATION

NO. 05-4182
and Consolidated Cases
"K" (2)
JUDGE DUVAL

MAG. WILKINSON

ROBINSON

CIVIL ACTION

NO. 06-2286

VERSUS

THE UNITED STATES

VIDEOTAPED DEPOSITION OF

ROBERT GLENN BEA,

60 Shuy Drive, Moraga, California 94556
given in the offices of Lambert & Nelson, 701
Magazine Street, New Orleans, Louisiana 70130
on Monday November 19, 2007.

BEA, ROBERT GLENN

11/19/2007

Page 2	Page 4
<p>1 APPEARANCES: 2 O'DONNELL & ASSOCIATES (BY: PIERCE O'DONNELL, ESQ.) 3 Suite 1000 4 550 Hope Street Los Angeles, California 90071-2627 ATTORNEYS FOR ROBINSON PLAINTIFFS</p> <p>5 6 UNITED STATES DEPARTMENT OF JUSTICE 7 TORTS BRANCH, CIVIL DIVISION (BY: ROBIN D. SMITH, ESQ.) 8 DAN BAEZA, ESQ. Room 8095N 9 1331 Pennsylvania Avenue NW Washington, D.C. 20530 ATTORNEYS FOR UNITED STATES</p> <p>10 11 LAW OFFICES OF JOSEPH M. BRUNO 12 (BY: JOSEPH M. BRUNO, ESQ.) FLORIAN BUCHLER, ESQ.) 13 855 Baronne Street New Orleans, Louisiana 70113 14 PLAINTIFF LIAISON COUNSEL</p> <p>15 16 ALSO PRESENT IN ATTENDANCE: 17 LAMBERT & NELSON (BY: LINDA NELSON, ESQ.) 18 ALEXIS BEVIS, ESQ.) 701 Magazine Street 19 New Orleans, Louisiana 70130 ATTORNEYS FOR THE PLAINTIFFS</p> <p>20 21 GAINSBURGH, BENJAMIN, DAVID, MEUNIER & 22 WARSHAUER (BY: GERALD E. MEUNIER, ESQ.) 23 1100 Poydras Street Suite 2800 24 New Orleans, Louisiana 70163 ATTORNEYS FOR PLAINTIFFS</p> <p>25</p>	<p>1 ALSO PRESENT IN ATTENDANCE (CONTINUED) 2 3 MCCRANIE, SISTRUNK, ANZELMO, HARDY, MAXWELL & MCDANIEL (BY: DARCY DECKER, ESQ.) 4 Suite 800 3445 North Causeway Blvd. 5 Metairie, Louisiana 70002 ATTORNEYS FOR ORLEANS LEVEE DISTRICT</p> <p>6 7 8 GOODWIN PROCTER LLP (BY: MARK S. RAFFMAN, ESQ.) 901 New York Avenue NW 9 Washington, D.C. 20001 ATTORNEYS FOR LAFARGE NORTH AMERICA</p> <p>10 11 12 ALSO PRESENT: Richard J. Varuso</p> <p>13 14 15 VIDEOTAPED BY: Greg Cassin, Depo-Vue</p> <p>16 17 REPORTED BY: ROGER D. JOHNS, RMR, CRR, CSR Certified Court Reporter, State of Louisiana</p> <p>18 19 20 21 22 23 24 25</p>
Page 3	Page 5
<p>1 ALSO PRESENT IN ATTENDANCE (CONTINUED) 2 3 LAW OFFICE OF DANIEL E. BECNEL (BY: DANIEL E. BECNEL, JR., ESQ.) 4 425 West Airline Highway Suite B LaPlace, Louisiana 70068 ATTORNEYS FOR PLAINTIFFS</p> <p>5 6 F. GERALD MAPLES, PA (BY: TODD CAMPBELL, ESQ.) 7 902 Julia Street New Orleans, Louisiana 70113 ATTORNEYS FOR PLAINTIFFS</p> <p>8 9 10 DUPLASS, ZWAIN, BOURGEOIS, MORTON, PFISTER & WEINSTOCK 11 (BY: GARY ZWAIN, ESQ.) Suite 2900 12 3838 North Causeway Boulevard Metairie, Louisiana 70002 ATTORNEYS FOR THE BOARD OF 13 COMMISSIONERS FOR THE LAKE BORGNE BASIN LEVEE DISTRICT</p> <p>14 15 STONE PIGMAN WALTHER WITTMANN (BY: WILLIAM D. TREEBY, ESQ.) 16 546 Carondelet Street New Orleans, Louisiana 70130-3588 ATTORNEYS FOR WASHINGTON GROUP 17 INTERNATIONAL, INC.</p> <p>18 19 BURGLASS & TANKERSLEY (BY: MONICA WALDRON, ESQ.) 20 5213 Airline Drive Metairie, Louisiana 70001 ATTORNEYS FOR JEFFERSON PARISH</p> <p>21 22 23 24 25</p>	<p>1 S T I P U L A T I O N 2 3 It is stipulated and agreed by and between 4 counsel for the parties hereto 5 that the deposition of the aforementioned 6 witness is hereby being taken under the 7 Federal Rules of Civil Procedure, for all 8 purposes, in accordance with law; 9 That the formalities of reading and 10 signing are not waived; 11 That the formalities of certification and 12 filing are specifically waived; 13 That all objections, save those as to the 14 form of the question and the responsiveness of 15 the answer, are hereby reserved until such 16 time as this deposition, or any part thereof, 17 may be used or sought to be used in evidence.</p> <p>18 19 * * * * 20 21 ROGER D. JOHNS, RDR, CRR Certified Court 22 Reporter, for the State of Louisiana, 23 officiated in administering the oath to the 24 witness.</p> <p>25</p>

2 (Pages 2 to 5)

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BEA, ROBERT GLENN

11/19/2007

Page 10	Page 12
<p>1 Q. And because the Court Reporter is 2 going to be making a written transcript of 3 your comments, I would ask you to please give 4 me an audible answer rather than nodding your 5 head. 6 A. Done. 7 Q. Is there any reason today why you 8 cannot give competent testimony in this 9 matter? Are you under any medications or -- 10 A. None. 11 Q. -- any disabilities? 12 A. Old age. 13 Q. Other than the ones that afflict us 14 all. 15 A. Some of us. 16 Q. If at any point I ask you a question 17 and it's not clear, will you agree to tell me 18 that it's not clear and give me an opportunity 19 to restate the question? 20 A. Yes. 21 Q. I would like to find out how you 22 first became involved in this litigation. 23 A. It happened a year from -- Well, 24 March, 19 -- Or, pardon me. March, 2006. I 25 was contacted by Mr. Danny Becnel and</p>	<p>1 conversations with either Mr. Becnel or Mr. 2 Bruno after that initial discussion? 3 A. Certainly. 4 Q. And can you tell me a little bit 5 about those conversations? 6 A. Really dealing with understanding 7 details of the studies that we had performed 8 here since September 30th, 2005. 9 Q. And when you say "we had performed 10 here", what studies are you referring to that 11 you had performed beginning in September of 12 2005? 13 A. Those were the studies that are 14 documented in the Independent Levee 15 Investigation Team report. 16 Q. Okay. Did you bring a copy of that 17 report with you, Dr. Bea? 18 A. Electronically. 19 Q. All right. 20 MR. O'DONNELL: 21 Let's mark his computer. 22 EXAMINATION BY MR. SMITH: 23 Q. I am going to hand you what's been 24 marked as Bea Exhibit Number 1 and ask if you 25 can identify that as the report that you just</p>
Page 11	Page 13
<p>1 subsequently by Joseph Bruno. 2 Q. And what did they tell you at that 3 time? 4 A. Well, they were actually asking 5 would I serve as an expert concerned with the 6 consolidated Katrina litigation Federal 7 District Court, New Orleans. 8 Q. And did you agree at that time? 9 A. No, I did not. 10 Q. Okay. Did you subsequently agree? 11 A. Yes. March, 2007. 12 (Whereupon a discussion was held 13 off the record.) 14 VIDEO OPERATOR: 15 We're back on the record. It's 16 8:22. 17 EXAMINATION BY MR. SMITH: 18 Q. I understand from your previous 19 answer that you were first contacted 20 concerning this litigation in March of 2006. 21 A. Correct. 22 Q. At that time you did not agree to 23 serve as an expert. 24 A. Correct. 25 Q. Did you have continuing</p>	<p>1 referenced. 2 A. This is a part of the report. 3 Q. What part is that? 4 A. The front part. 5 Q. What is the front part? 6 A. It is chapters -- parts 1 through 7 15. 8 Q. All right. Let's change this out. 9 This has got the whole thing. I gave you the 10 wrong one. Let's mark this one 1. 11 All right. I'm going to hand you, 12 again, something that's maybe a little more 13 complete and hopefully it will have the entire 14 report. 15 MR. O'DONNELL: 16 Is that the ILIT report? 17 MR. SMITH: 18 Yes. 19 MR. O'DONNELL: 20 Thanks. 21 MR. SMITH: 22 Well, Dr. Bea will tell us. I 23 believe it is. 24 MR. O'DONNELL: 25 I don't want to carry it home.</p>

4 (Pages 10 to 13)

BEA, ROBERT GLENN

11/19/2007

<p style="text-align: right;">Page 122</p> <p>1 Q. What is the basis of that assertion, 2 sir?</p> <p>3 A. The multiple field studies that I 4 participated in on Reach 2 of the Mississippi 5 River Gulf Outlet EBSBs.</p> <p>6 Q. Okay. So is that essentially a 7 conclusion based upon what you observed in the 8 wake of Hurricane Katrina at those locations 9 that you visited?</p> <p>10 A. That and information that became 11 subsequent to those visits.</p> <p>12 Q. Okay. And what information?</p> <p>13 A. For example, soil borings.</p> <p>14 Q. Which soil borings would you be 15 referring to, if you know?</p> <p>16 A. I don't recall the numbers, but 17 there is something of the order of 30 soil 18 borings along Reach 2 of -- along Reach 2.</p> <p>19 Q. Would these be soil borings taken 20 from the center line of the earthen levees or 21 earthen embankments?</p> <p>22 A. In some cases, yes.</p> <p>23 Q. Well, you referred to 30. I thought 24 you had 30 specifically in mind. Are these -- 25 Some soil borings as I understand it were</p>	<p style="text-align: right;">Page 124</p> <p>1 MR. SMITH: 2 Well, Pierce, it looks like you 3 get your wish. We're about out of 4 time on the videotape. So let's take 5 a break now.</p> <p>6 MR. O'DONNELL: 7 Okay. Great.</p> <p>8 VIDEO OPERATOR: 9 Off the record. This concludes 10 tape two. 11 (Recess.) 12 VIDEO OPERATOR: 13 We're back on the record. It's 14 11:33. This is the start of tape 3.</p> <p>15 EXAMINATION BY MR. SMITH: 16 Q. Dr. Bea, I wanted to ask you just a 17 question that I didn't ask you earlier and 18 it's a little bit unrelated, but just to go 19 back and clean it up. You are being paid on, 20 compensated on an hourly basis by the 21 Plaintiffs in this matter and you're producing 22 a written report every two weeks. Do you get 23 paid on a regular basis? 24 A. Yes. 25 Q. And how frequently do you get paid?</p>
<p style="text-align: right;">Page 123</p> <p>1 taken along the -- 2 A. Alignment.</p> <p>3 Q. -- alignment of the MRGO itself.</p> <p>4 A. Correct.</p> <p>5 Q. The waterway.</p> <p>6 A. Correct.</p> <p>7 Q. And I am just trying to find out if 8 the soil borings that informed your opinion 9 about what was built there were soil borings 10 that were taken from the navigation channel.</p> <p>11 A. (Witness shakes head negatively.)</p> <p>12 Q. No?</p> <p>13 A. No.</p> <p>14 Q. From the levee alignment itself?</p> <p>15 A. Correct.</p> <p>16 Q. And these would be USACE documents?</p> <p>17 A. USACE?</p> <p>18 Q. When I say "these", I mean the 30 19 soil borings that you're referring to, these 20 were soil borings that were performed at the 21 behest of the Corps of Engineers?</p> <p>22 A. That plus the additional ones we 23 performed there.</p> <p>24 Q. Subsequent to Hurricane Katrina?</p> <p>25 A. Correct.</p>	<p style="text-align: right;">Page 125</p> <p>1 A. Monthly from the University of 2 California at Berkeley. Monthly from the 3 Consolidated Katrina Litigation Levees and 4 MRGO groups.</p> <p>5 Q. Are you being compensated separately 6 by the Robinson Plaintiffs or is --</p> <p>7 A. Correct.</p> <p>8 Q. I mean, when I say separately, I 9 mean is that in addition and separate to the 10 compensation you're receiving monthly from the 11 consolidated Katrina --</p> <p>12 A. It's part of.</p> <p>13 Q. Okay. So --</p> <p>14 A. So there's two groups. The levee 15 group and the GO group.</p> <p>16 Q. So you're billing some of your hours 17 to the MRGO group?</p> <p>18 A. Correct.</p> <p>19 Q. Some of your hours to the levee 20 group?</p> <p>21 A. Correct.</p> <p>22 Q. And how many -- Do you know how many 23 hours you have billed both of those two groups 24 together?</p> <p>25 A. Yes. We can separate it and then</p>

32 (Pages 122 to 125)

BEA, ROBERT GLENN

11/19/2007

<p style="text-align: right;">Page 126</p> <p>1 you can total it. Approximately 400 hours to 2 the MRGO group; approximately 350 hours to the 3 levee group. 4 Q. So 750 hours. That would have been 5 since -- 6 A. March, 2007. 7 Q. March of this year. 8 A. Correct. 9 Q. And that's a little more than seven 10 months ago? 11 A. Correct. 12 Q. So about 100 -- approximately 100 13 hours a month? 14 A. Correct. 15 Q. The work that you're performing as 16 part of the ILIT Team, I take it -- you have 17 mentioned that it's for the benefit of the 18 Plaintiffs in this litigation who have 19 retained you, because you're using the results 20 of those studies that you're pursuing in 21 producing this report, for instance. 22 A. Correct. 23 Q. So are the hours that you're 24 spending as extending and elaborating on the 25 ILIT report, are you billing those to the</p>	<p style="text-align: right;">Page 128</p> <p>1 more pro bono hours since this report was 2 written. 3 Q. More than you did before the report 4 was written? I mean, when you say more, I am 5 not sure what the comparison is to. 6 A. Well, you're referring to the 5,000 7 hours here? 8 Q. Correct. 9 A. Well, since that time I have 10 continued the pro bono work here. 11 Q. I see. And that pro bono work is 12 what you identify with the ILIT studies? 13 A. Correct. 14 Q. We were talking about the -- which I 15 take it to be your criticism of the flood 16 protection structures that were built by the 17 Corps of Engineers along Reach 2 of the MRGO 18 and along the New Orleans East Back Levee -- 19 A. Correct. 20 Q. -- before the break. And your 21 dissatisfaction, I suppose, with the work that 22 was performed there led you to coin a phrase, 23 "EBSB", -- 24 A. Correct. 25 Q. -- to describe those structures in</p>
<p style="text-align: right;">Page 127</p> <p>1 Plaintiffs in this litigation? 2 A. No. 3 Q. Are you being compensated for that 4 by the University? 5 A. No. 6 Q. Are you keeping track of those hours 7 separate and apart from the hours that you're 8 working for the Plaintiffs in this 9 litigation? 10 A. Yes. 11 Q. Do you know how many hours you have 12 spent on the ILIT -- 13 A. Related efforts? 14 Q. Related efforts? 15 A. Approximately 5,530. 16 Q. Now, that sounds like an update from 17 the number that you listed in your report. I 18 think you said 5,000 in your report. 19 A. Uh-huh (affirmatively). 20 Q. You might have said more than. So 21 you just approximated it there. 22 A. Well, I've actually been spending 23 more pro bono hours. 24 Q. I'm sorry, say that again, sir? 25 A. I have actually been spending much</p>	<p style="text-align: right;">Page 129</p> <p>1 those two locations. 2 A. That is correct. 3 Q. And I asked you specifically about 4 what you describe in your report as a decision 5 to build -- not to build levees, -- 6 A. Correct. 7 Q. -- but to build piles of dirt. Is 8 the decision not to build levees reflected in 9 Design Memorandum Number 3, which is the 10 design memorandum, 1966, November, for the 11 Chalmette area -- 12 A. Correct. 13 Q. -- levees? Okay. I would like to 14 turn your attention to that document at this 15 time. 16 MR. BAEZA: 17 Just bring it over? 18 THE WITNESS: 19 Sure. Whatever works. 20 MR. O'DONNELL: 21 Do you have another copy? 22 MR. BAEZA: 23 A couple of copies. 24 MR. O'DONNELL: 25 I just need one.</p>

33 (Pages 126 to 129)

EXHIBIT G

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF LOUISIANA

IN RE: KATRINA CANAL BREACHES
CONSOLIDATED LITIGATION

CIVIL ACTION

NO. 05-4182

SECTION "K" (2)

FILED IN: 05-4181, 05-4182, 05-5237, 05-6073, 05-6314, 05-6324,
05-6327, 05-6359, 06-0225, 06-0886, 06-1885, 06-2152,
06-2278, 06-2287, 06-2824, 06-4024, 06-4065, 06-4066,
06-4389, 06-4634, 06-4931, 06-5032, 06-5155, 06-5159,
06-5161, 06-5260, 06-5162, 06-5771, 06-5937, 07-0206,
07-0621, 07-1073, 07-1271, 07-1285

PERTAINS TO: MRGO

MR-GO MASTER CONSOLIDATED CLASS ACTION COMPLAINT

NOW COMES THE MR-GO PLAINTIFFS SUBGROUP LITIGATION
COMMITTEE ("MR-GO PSLC"), PURSUANT TO CMO NO. 4, FOR THE PURPOSE
OF FILING THIS SUPERSEDING *MR-GO MASTER CONSOLIDATED CLASS
ACTION COMPLAINT*.

VIII. COUNT THREE:

THE IHNC/INDUSTRIAL NAVIGATION CANAL:

AGAINST WASHINGTON GROUP, THE CORPS and ORLEANS

(Affects Only the Lower Ninth Ward/St. Bernard Sub-Class)

39. Named Plaintiffs re-allege all previous allegations contained herein, and in addition to the allegations regarding the MR-GO set forth above, Plaintiffs aver, upon information and belief, that the breaches and failure of the hurricane protection levees and flood walls of the IHNC/Industrial Canal were caused by the negligence and fault of the Defendants Corps, Washington Group, and Orleans all as set forth herein.

40. Defendant Washington Group contracted with the Corps in connection with the IHNC/Industrial Canal Lock Replacement Project, which was authorized by the River and Harbor Act of 1956, the Water Resources Development Acts of 1986 and 1996, and which was intended to enlarge and deepen the lock. Defendant Washington Group was hired to level and clear abandoned industrial sites along the IHNC/Industrial Canal between the flood wall and the canal itself for the purpose of clearing acreage to make way for the digging of a new canal, which would be used temporarily for the same purpose as the existing IHNC/Industrial Canal while the new system of larger locks was constructed.

41. The initial phases of work included demolition and site preparation of what was referred to as the East Bank Industrial Area—a 32-acre site located between Florida Avenue and Claiborne Avenue and extending from the canal to the floodwall. Defendant Washington Group's tasks included, but were not limited to, the removal of wharfage, salvage, debris, and other materials from the IHNC/Industrial Canal and/or its banks.

42. More specifically, Defendant Washington Group's scope of work included, but were not limited to: demolition of abandoned industrial structures on the east side of the canal; removal of underground structures described in Defendant's own recommendation reports as "extensive excavation and subsurface activity"; abatement of vegetation, including numerous oak trees; removal of canal side obstructions; removal of the Jordan Street wharf, which included the removal of a concrete deck and support pilings to a depth of 36 feet below mean water level; removal of all electrical, sewer, gas, water, and telephone facilities on the site, including Boland sewer lift station; "bank removal" that included the vibratory extraction of bulkheads along the canal water's edge; removal of more than fifty structures and more than forty concrete slabs; grid trenching of the entire East Bank Industrial Area; removal of ten sunken or partially sunken barges; removal of barges that served as building foundations; removal of an estimated 3,000 pilings at the site, both on land and in the canal, by use of a vibratory extractor (to a depth of 30 feet for land-based pilings and 40-50 feet for canal/water-based pilings); grading and hydro-mulching the site; and other such work to be demonstrated through the course of discovery and trial.

43. In performing the work, Defendant Washington Group, based on information and belief, undermined the integrity of the levee, and/or flood wall along the eastern shoreline of the IHNC/Industrial Canal, abutting the Lower Ninth Ward of Orleans Parish.

44. Defendant Washington Group's acts and/or omissions resulted in underseepage-induced erosion and other damage to the levee and/or flood wall, ultimately causing and/or contributing to its catastrophic failure.

45. Defendant Washington Group was negligent and/or at fault in the following non-exclusive respects: (1) it knew or should have known that its work was causing damage to the levee and/or flood wall structures and did nothing to correct the problem; (2) it failed to follow proper procedures in performing its work; (3) it failed to comply with appropriate regulations and standards in performing its work; (4) it failed to notice the damage caused by its work and failed to call that damage to the attention of the appropriate authorities; (5) and any other acts of fault or negligence to be proven upon the trial of the cause.

46. The negligence and/or fault of the Corps, caused or contributed to cause the failure of the levee and/or flood wall and/or spoil bank on the sides of the IHNC/Industrial Canal.

47. The negligence of the Corps consisted of the following non-exclusive particulars: (1) allowing the work to proceed; (2) failing to caution the Washington Group about the potential damage to the levee and/or flood wall system by its work; (3) failing to monitor and/or properly inspect the work of the Washington Group; (4) failing to adequately evaluate the potential damage to the levee and/or flood wall structure by the work of Washington Group; (5) failing to correct the damage caused by the actions of the Washington Group; (6) failing to discharge its duty to maintain the integrity of the levee and/or flood wall system of the IHNC/Industrial Canal; (7) and other acts of negligence or fault to be shown at trial of the cause.

48. The negligence and/or fault of Defendant Orleans caused or contributed to the cause of the failure of the levee and/or flood wall and/or I-Walls and/or spoilbanks on the sides of the IHNC/Industrial Canal.

EXHIBIT H

UNITED STATES DISTRICT COURT

EASTERN DISTRICT OF LOUISIANA

IN RE: KATRINA CANAL BREACHES
CONSOLIDATED LITIGATION

CIVIL ACTION

NO.: 05-4182

SECTION "K"(2)

FILED IN: 05-4181, 05-4182, 05-5237, 05-6073, 05-6314, 05-6324,
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06-4389, 06-4634, 06-4931, 06-5032, 06-5155, 06-5159,
06-5161, 06-5260, 06-5162, 06-5771, 06-5937, 07-0206,
07-0621, 07-1073, 07-1271, 07-1285

PERTAINS TO: MR-GO

**PLAINTIFFS' RESPONSE TO MRGO DEFENDANTS' FIRST SET OF JOINT
INTERROGATORIES, REQUESTS
FOR PRODUCTION OF DOCUMENTS AND REQUESTS FOR
ADMISSIONS TO PLAINTIFFS REGARDING COMMON LIABILITY ISSUES**

Pursuant to Federal Rules of Civil Procedure 33, 34 and 36, and Case Management Order

("CMO") No. 4, Section IV(B)(1)(d), as amended by Order issued March 29, 2007, Plaintiffs submit these Responses to Defendants' First Set of Joint Interrogatories, Requests for Production of Documents and Requests for Admissions to Plaintiffs Regarding Common Liability Issues.

GENERAL OBJECTIONS

Plaintiffs' General Objections, as set forth below, apply to each of Defendants' discovery request as if each such objection was set forth in the response. In providing the following responses, Plaintiffs do not in any manner waive or intend to waive any objections or defenses and are preserving:

All objections as to the competency, relevancy, materiality and admissibility of any document or information provided; and

RESPONSE TO INTERROGATORY NO. 8:

See Plaintiffs' List of Exhibits filed on or about March 30, 2007 as required by the Court in CMO # 4, as amended. Plaintiffs will also submit supplemental and final exhibit lists as required by CMO # 4, as amended, and which are prospectively incorporated herein.

INTERROGATORY NO. 9:

Specify in detailed narrative form the factual basis for allegations made by you in the Complaint against the Lake Borgne Levee District ("LBLD"), relating specifically to the LBLD's alleged responsibilities for the authorization, design, construction, operation or maintenance of any part of the Hurricane Protection System you contend to have caused damage to plaintiffs, and identify any and all documents, evidence, or other similar materials in your possession or under your control to support such factual basis.

RESPONSE TO INTERROGATORY NO. 9:

Plaintiffs object to the extent this Interrogatory seeks to have Plaintiffs' counsel disclose mental impressions and work product, all of which is privileged and protected from disclosure. Plaintiffs further object on the grounds that this request seeks the disclosure of expert opinions and reliance materials, all of which is not yet due under the deadlines established by the CMO # 4, as amended.

Plaintiffs further object as this request is overly broad, unduly burdensome and/or oppressive and requests information that is irrelevant to the subject matter of this action and/or is not reasonably calculated to lead to the discovery of admissible evidence.

Plaintiffs have not completed their investigation of the facts relating to this action, have not interviewed all potential witnesses, have not completed discovery and have not completed their preparation for the trial or any evidentiary hearing in this matter. Accordingly, the response provided is given without prejudice to Plaintiffs' rights to produce, at any time, subsequently

discovered evidence relating to presently known material facts and to produce all evidence, whenever discovered, relating to subsequently discovered material facts.

Subject to these objections, Plaintiffs respond as follows: Plaintiffs refer Defendants to the factual allegations of the Levee Superseding Master Consolidated Class Action Complaint, the IPET Report, Team Louisiana Report, the Independent Levee Investigation Team report, and all discovery provided by any party to this Litigation, all of which is publicly available and incorporated herein by reference. See also those documents listed on Exhibit "A" annexed hereto and incorporated herein by reference.

Discovery is ongoing and Plaintiffs will supplement their response as required.

INTERROGATORY NO. 10:

Specify in detailed narrative form the factual basis for allegations made by you against each and every MRGO Defendant, individually, that its actions or inactions played any part or role in causing any failure, breach or overtopping of any portion of the Hurricane Protection System you contend caused damage to plaintiffs, and identify any and all documents, evidence or other similar materials in your possession or under your control to support such factual basis.

RESPONSE TO INTERROGATORY NO. 10:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 11:

Identify any and all state, federal or local statutes or regulations you contend may apply to any MRGO Defendant, individually, with respect to the authorization, design, construction, operation, maintenance, inspection and/or oversight of any levees, floodwalls, spoil banks or other portion of the Hurricane Protection System you contend caused damage to plaintiffs.

RESPONSE TO INTERROGATORY NO.11:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 12:

Identify any and all state, federal or local statutes or regulations you contend may apply to any MRGO Defendant, individually, with respect to construction, demolition, remediation, and/or any other work performed in the area surrounding any levees, floodwalls, spoil banks or other portion of the Hurricane Protection System, which you contend caused damage to plaintiffs.

RESPONSE TO INTERROGATORY NO. 12:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 13:

Identify any state, federal or local statutes or regulations you contend any MRGO Defendant, individually, may have "violated," as that term is used by you in the Complaint, with respect to allegations made by you against it in the Complaint.

RESPONSE TO INTERROGATORY NO. 13:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 14:

Specify in detailed narrative form the factual basis for allegations made by you against any MRGO Defendant, individually, for "violations" of any statutes or regulations as referenced in the Complaint, and identify any and all documents, evidence or other similar materials in your possession or under your control to support such factual basis.

RESPONSE TO INTERROGATORY NO. 14:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 15:

Identify any architectural, engineering, construction or other type of protocol, guideline, practice, convention or other applicable code or provision included in the standard of care you contend any MRGO Defendant, individually, may have "violated" with respect to any portion of the Hurricane Protection System.

RESPONSE TO INTERROGATORY NO. 15:

See Plaintiffs' response to Interrogatory No. 9 *supra*.

INTERROGATORY NO. 16:

Specify in detailed narrative form the factual basis for allegations made by you against each and every MRGO Defendant, individually, for alleged "violations" of any protocols, guidelines, practices, conventions, or other applicable code or provision as referenced in Interrogatory No. 15, and identify any and all documents, evidence or other similar materials in your possession or under your control to support such factual basis.

RESPONSE TO INTERROGATORY NO. 16:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 17:

Specify in detailed narrative form the factual basis for allegations made by you against each and every MRGO Defendant, individually, that it may have "caused and/or contributed to the inadequacy or breaching of the Flood Protection System that protects the Greater New Orleans area" as referenced specifically in Paragraph 15(b) of the Complaint, and identify any and all documents, evidence or other similar materials in your possession or under your control to support such factual basis.

RESPONSE TO INTERROGATORY NO. 17:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 18:

Define "dredging activities," as that term is specifically used by you in Paragraph 15(e) of the Complaint, and identify any and all documents, evidence, or other similar materials in your possession or under your control relating to any MRGO Defendants' involvement, if any, in these activities.

RESPONSE TO INTERROGATORY NO. 18:

Dredging is intended to encompass the customary meaning of the term as used in common parlance and as defined in any authoritatively recognized dictionary. The term is also intended to have such meaning as is defined in state or federal (including maritime) law, statutes, regulation or the like.

INTERROGATORY NO. 19:

Specify in detailed narrative form the factual basis for your allegations of "nuisance" against any MRGO Defendant, individually, as alleged in the Complaint, and identify any and all documents, evidence or other similar materials in your possession or under your control to support such factual basis.

RESPONSE TO INTERROGATORY NO. 19:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 20:

Specify in detailed narrative form the factual basis for allegations made by you that any MRGO Defendant, as set forth in Paragraphs 39 through 50 of the Complaint, undermined, damaged,

caused, contributed to, or otherwise played a part in the failure, overtopping breaching of the IHNC levee and/or flood walls, spoil banks, and identify any and all documents, evidence or other similar materials in your possession or under your control to support such factual basis.

RESPONSE TO INTERROGATORY NO. 20:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 21:

Define "underseepage-induced erosion," as that term is specifically used by you in Paragraph 44 of the Complaint.

RESPONSE TO INTERROGATORY NO. 21:

"Underseepage-induced erosion" is intended to encompass the customary meaning of the words as used in common parlance and as defined in any authoritatively recognized dictionary.

INTERROGATORY NO. 22:

Specify in detailed narrative form the factual basis for your allegation in Paragraph 43 of the Complaint that Washington Group International, Inc.'s ("WGII") work along the eastern shoreline of the IHNC/Industrial Canal, undermined the integrity of the levee and/or floodwall abutting the Lower Ninth Ward, and identify any and all documents, evidence or other similar materials in your possession or under your control to support any such factual basis.

RESPONSE TO INTERROGATORY NO. 22:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

Plaintiffs' further object to the request to produce a narrative as FRCP, Rule 33 (d) sets forth that a party has no right to require his opponent to make compilations of information in response to interrogatories when documents containing material necessary for the compilations are available to the first party.

INTERROGATORY NO. 23:

Specify in detailed narrative form the factual basis for your allegation in Paragraph 44 of the Complaint that WGII's work along the eastern shoreline of the IHNC/Industrial Canal, resulted in "underseepage-induced erosion and other damage" to the levee and/or floodwall abutting the Lower Ninth Ward, and identify any and all documents, evidence or other similar materials in your possession or under your control to support any such factual basis.

RESPONSE TO INTERROGATORY NO. 23:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

Plaintiffs' further object to the request to produce a narrative as FRCP, Rule 33 (d) sets forth that a party has no right to require his opponent to make compilations of information in response to interrogatories when documents containing material necessary for the compilations are available to the first party.

INTERROGATORY NO. 24:

What do you contend to be the "jurisdiction" of the LBLD, as that term is specifically used by you in Paragraph 51 of the Complaint.

RESPONSE TO INTERROGATORY NO. 24:

See Plaintiffs' response to Interrogatory No. 9, *supra*. See also the Constitution of the State of Louisiana and enabling laws pertaining to the LBLD.

INTERROGATORY NO. 25:

With respect to each and every MRGO Defendant, individually, define "responsibility for the care and inspection of the levees," as that term is specifically used by you in Paragraph 51 of the Complaint.

RESPONSE TO INTERROGATORY NO. 25:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 26:

Identify all persons and/or entities who you contend had ownership, care, custody, control, and/or *garde* of MRGO, the GIWW, the East Bank Industrial Area, the 40 Arpent Canal and/or the Florida Walk Canal at any time prior to August 29, 2005, and specify the corresponding time period for each such person and/or entity identified.

RESPONSE TO INTERROGATORY NO. 26:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 27:

With respect to each MRGO Defendant, individually, identify the "statutorily mandated responsibilities" you contend apply, as that term is used in Paragraph 53 of the Complaint.

RESPONSE TO INTERROGATORY NO. 27:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 28:

Identify the "proper procedures" and "appropriate regulations and standards" you contend apply to WGII's work at the IHNC/Industrial Canal and identify any and all documents, evidence or other similar materials in your possession or under your control relating to such procedures and standards.

RESPONSE TO INTERROGATORY NO. 28:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 29:

Specify in detailed narrative form the factual basis for each of the conclusions set forth in Paragraph 45 of the Complaint.

RESPONSE TO INTERROGATORY NO. 29:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 30:

Define "Hurricane Alley" and "Hurricane Highway," as those terms are specifically used by you in Paragraphs 60 and 61 of the Complaint.

RESPONSE TO INTERROGATORY NO. 30:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 31:

Identify and describe the boundaries of the levees and floodwalls as those terms are used in Paragraphs 41–45 of the Complaint.

RESPONSE TO INTERROGATORY NO. 31:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 32:

Specify in detailed narrative form the factual basis for allegations made by you that any MRGO Defendant, individually, failed to ensure the use of proper materials in constructing the levees or any subsequent lift, and identify any and all documents, evidence or other similar materials in your possession or under your control to support any such factual basis.

RESPONSE TO INTERROGATORY NO. 32:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 33:

Specify in detailed narrative form the factual basis for allegations made by you that any MRGO Defendant, individually, failed to adequately evaluate the potential damage to the levee and/or floodwall structure by storm surges, and identify any and all documents, evidence or other similar materials in your possession or under your control to support any such factual basis.

RESPONSE TO INTERROGATORY NO. 33:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 34:

Specify in detailed narrative form the factual basis for allegations made by you that any MRGO Defendant, individually, failed to correct known or identifiable defects in the levee system, and identify any and all documents, evidence or other similar materials in your possession or under your control to support such factual basis.

RESPONSE TO INTERROGATORY NO. 34:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 35:

Specify in detailed narrative form the factual basis for allegations made by you that any MRGO Defendant, individually, failed to discharge its duty to maintain the integrity of the levee and/or the floodwall system and to comply with Congressional and other legal mandates, and identify any and all or under your control documents, evidence or other similar materials in your possession or under your control to support any such factual basis.

RESPONSE TO INTERROGATORY NO. 35:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 36:

Specify in detailed narrative form the factual basis for allegations made by you of "negligent acts and omissions" against each and every MRGO Defendant, individually, under each Louisiana Civil Code Article referenced by you in Paragraph 75 of the Complaint, and identify any and all documents, evidence or other similar materials in your possession or under your control to support any such factual basis.

RESPONSE TO INTERROGATORY NO. 36:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 37:

Specify in detailed narrative form the factual basis for allegations made by you of "strict liability" against each and every MRGO Defendant, individually, as alleged in Paragraph 77 of the Complaint, and identify any and all documents, evidence or similar materials in your possession or under your control to support such factual basis.

RESPONSE TO INTERROGATORY NO. 37:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 38:

Specify in detailed narrative form the factual basis for allegations made by you of "Res Ipsa Loquitur" against each and every MRGO Defendant, individually, as alleged in Paragraph 79 of the Complaint, and identify any and all documents, evidence or similar materials in your possession or under your control to support such factual basis.

RESPONSE TO INTERROGATORY NO. 38:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 39:

Specify in detailed narrative form the factual basis for allegations made by you that any portion of the Hurricane Protection System either was, was not and/or should have been "armored" as alleged in the Complaint, and identify any and all documents, evidence or similar materials in your possession or under your control to support such factual basis.

RESPONSE TO INTERROGATORY NO. 39:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 40:

Specify in detailed narrative form the factual basis for any allegations made by you against the LBLD with respect to the authorization, design, construction, operation or maintenance, of any portion of the 40 Arpent Canal, the Florida Walk Canal and/or any levees, flood walls, spoil banks, etc. associated therewith as referenced in the Complaint, and identify any and all documents, evidence or other similar materials to support such factual basis

RESPONSE TO INTERROGATORY NO. 40:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 41:

Specify in detailed narrative form the factual basis for allegations made by you that any MRGO Defendant, individually, failed to preserve, maintain, rebuild, or otherwise exercise appropriate care for marshes and/or swamps to act as a buffer from storm surges as alleged in the Complaint, and identify any and all documents, evidence or other similar materials in your possession or under your control to support such factual basis.

RESPONSE TO INTERROGATORY NO. 41:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 42:

Specify in detailed narrative form each source of waters or flooding you contend caused damage to plaintiffs, and with respect to each such source identify the affected geographical area within the New Orleans East Sub-Class and the affected geographical area within the Lower Ninth Ward and St. Bernard Sub-Class, as referenced by you in the Complaint.

RESPONSE TO INTERROGATORY NO. 42:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY NO. 43:

Identify any and all documents, evidence or other similar materials in your possession or under your control relating to any "independent studies" or other similar documents from any "independent engineers," as those terms are specifically used by you in Paragraph 52 of the Complaint.

RESPONSE TO INTERROGATORY NO. 43:

See Plaintiffs' response to Interrogatory No. 9, *supra*.

INTERROGATORY 44:

Specify in detailed narrative form the factual basis for asserting in Paragraph 77 of the Complaint that any MRGO Defendant had "at all relevant times, the care, custody and control, and thus the *garde* of the IHNC/Industrial Canal . . . including such other levees/floodwalls and/or spoil banks in Orleans Parish (East of the IHNC/Industrial Canal)," and identify any and all documents, evidence or other similar materials in your possession or under your control to support such factual basis.

RESPONSE TO INTERROGATORY NO. 44:

See Plaintiffs' response to Interrogatory Nos. 5 and 6, *supra*.

INTERROGATORY 45:

Identify any and all persons who you contend expressed complaints and/or concerns of any kind regarding demolition and/or remediation activities conducted by or on behalf of the United States Army Corps of Engineers in the East Bank Industrial Area.

RESPONSE TO INTERROGATORY NO. 45:

See Plaintiffs' response to Interrogatory Nos. 5 and 6, *supra*.

INTERROGATORY NO. 46:

Identify any and all persons who you contend have knowledge or other evidence of ponding and/or pooling of water, leaks, and/or sand boils on any residential and/or commercial property near

the levees and/or flood walls, etc. abutting IHNC/Industrial Canal, MRGO, the GIWW, the 40 Arpent Canal and/or the Florida Walk Canal prior to August 29, 2005.

RESPONSE TO INTERROGATORY NO. 46

See Plaintiffs' response to Interrogatory Nos. 5 and 6, *supra*

INTERROGATORY NO. 47:

Define "Standard Project Hurricane," as that term is used by you in the Complaint.

RESPONSE TO INTERROGATORY NO. 47

Objection, this term is a reference for hurricane protection planning and/or modeling utilized by the Corps of Engineers. Plaintiffs have no other definition but what the Corps of Engineers defines it to be.

REQUESTS FOR PRODUCTION OF DOCUMENTS

REQUEST FOR PRODUCTION NO. 1:

Produce any and all documents, materials or other information identified in your Answers to Defendants' Interrogatories or Responses to Defendants' Requests for Admissions, or used by you to answer Defendants' Interrogatories or respond to Levee Defendants' Requests for Admissions.

RESPONSE TO REQUEST FOR PRODUCTION NO. 1:

In addition to the General Objections set forth above, Plaintiffs object as the definitions and instructions accompanying this request render it vague, ambiguous, incomprehensible, or otherwise objectionable. Plaintiffs further object as this request is overly broad, unduly burdensome and/or oppressive and requests information that is irrelevant to the subject matter of this action and/or is not reasonable calculated to lead to the discovery of admissible evidence.

Plaintiffs have not completed their investigation of the facts relating to this action, have not interviewed all potential witnesses, have not completed discovery and have not completed their preparation for the trial or any evidentiary hearing in this matter. Accordingly, the response provided is given without prejudice to Plaintiffs' rights to produce, at any time, subsequently discovered evidence relating to presently known material facts and to produce all evidence, whenever discovered, relating to subsequently discovered material facts. Plaintiffs further object as this request seeks the mental impressions and/or work product of Plaintiffs counsel, all of which is privileged and protected from disclosure. Plaintiffs further object on the grounds that this Request also requires disclosure of expert opinions and reliance materials, all of which is not yet due under the deadlines established by the CMO # 4, as amended.

Subject to these objections, Plaintiffs respond as follows: Plaintiffs refer Defendants to the IPET Report, Team Louisiana Report, and the Independent Levee Investigation Team report, any document identified in Plaintiffs' Superseding Master Consolidated Class Action Complaint filed in this action, and all discovery provided by any party to this Litigation, all of which is publicly available and incorporated herein by reference. See also those documents listed on Exhibit "A" annexed hereto and incorporated herein by reference.

Discovery is ongoing and Plaintiffs will supplement their response as required

REQUEST FOR PRODUCTION NO. 2:

Produce any and all documents, materials or other information identified in your Federal Rule of Civil Procedure 26(A)(1)(a) and (b) Initial Disclosures to MRGO Defendants, including the Declaration of Dr. Robert Glenn Bea, filed on April 16, 2007.

RESPONSE TO REQUEST FOR PRODUCTION NO. 2:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 3:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control considered, reviewed or relied upon by your expert, Dr. Robert Glen Bea, for his April 16, 2007 Declaration.

RESPONSE TO REQUEST FOR PRODUCTION NO. 3:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 4:

Produce any and all witness statements, summaries, affidavits, deposition transcripts or other similar documents in your possession or under your control and in any way related to the facts and/or circumstances surrounding the above-referenced litigation and/or Hurricanes Katrina and Rita, including but not limited to any such materials from any other litigation or proceeding relating to or involving Hurricanes Katrina and/or Rita.

RESPONSE TO REQUEST FOR PRODUCTION NO. 4:

Plaintiffs specifically object to any discovery of common liability issues relating to Hurricane Rita. Without waiving that objection, Plaintiffs respond: See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 5:

Produce any and all resumes, Curriculum Vitae, case lists, fee schedules, retention agreements, and/or any other documents identifying or describing the qualifications or work of any expert you may or will call at the trial of this matter.

RESPONSE TO REQUEST FOR PRODUCTION NO. 5:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 6:

Produce any and all documents or materials provided to, received from, considered by, or reviewed by any expert in connection with the above-captioned litigation who you may or will call at the trial of this matter, as well as any and all documents or materials reviewed or relied upon by any such expert in formulating his or her opinion in connection with this litigation.

RESPONSE TO REQUEST FOR PRODUCTION NO. 6:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 7:

Produce any and all meteorological, hydrological, wind speed, weather modeling or monitoring or other similar data in your possession or under your control in any way related to the above-referenced litigation and/or Hurricanes Katrina and/or Rita, including but not limited to any such materials from any other litigation or proceeding.

RESPONSE TO REQUEST FOR PRODUCTION NO. 7:

Plaintiffs specifically object to any discovery of common liability issues relating to Hurricane Rita. Without waiving that objection, Plaintiffs respond: See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 8:

Produce any and all geological, topographical or other similar data, compilations of data, reports, or other similar information in your possession or under your control related to the above-referenced litigation and/or Hurricanes Katrina and/or Rita, including but not limited to any such materials from any other litigation or proceeding.

RESPONSE TO REQUEST FOR PRODUCTION NO. 8:

Plaintiffs specifically object to any discovery of common liability issues relating to Hurricane Rita. Without waiving that objection, Plaintiffs respond: See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 9:

Produce any and all "LIDAR" or other similar data in your possession or under your control in any way related to the above-referenced litigation and/or Hurricanes Katrina and/or Rita, including but not limited to any such materials from any other litigation or proceeding.

RESPONSE TO REQUEST FOR PRODUCTION NO. 9:

Plaintiffs specifically object to any discovery of common liability issues relating to Hurricane Rita. Without waiving that objection, Plaintiffs respond: See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 10:

Produce any and all photographs, videos, computer animations, aerial photographs, satellite photographs, maps or other images of any kind or type in your possession or under your control related to the above-referenced litigation and/or Hurricanes Katrina and/or Rita, including but not limited to any such materials from any other litigation or proceeding.

RESPONSE TO REQUEST FOR PRODUCTION NO. 10 :

Plaintiffs specifically object to any discovery of common liability issues relating to Hurricane Rita. Without waiving that objection, Plaintiffs respond: See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 11:

Produce any and all reports, affidavits, deposition transcripts or other similar documents (including drafts regardless of the form of the media) of any expert you have retained in connection

with the above-referenced litigation who you may or will call at the trial of this matter and which are related in any way to the issues underlying the above-referenced litigation, including but not limited to any such materials from any other litigation or proceeding.

RESPONSE TO REQUEST FOR PRODUCTION NO. 11:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 12:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related to or evidencing the "tidal surge" and/or "storm surge" of Hurricanes Katrina and/or Rita, as those terms are used by you in the Complaint, and how such "tidal surge" or "storm surge" of Hurricanes Katrina and/or Rita may have, in any way, impacted the Hurricane Protection System and caused plaintiffs' damages.

RESPONSE TO REQUEST FOR PRODUCTION NO. 12:

Plaintiffs specifically object to any discovery of common liability issues relating to Hurricane Rita. Without waiving that objection, Plaintiffs respond: See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 13:

Produce any and all data, compilations of data, documents, blueprints, plans, schematics, design memoranda, as built drawings, reports or other information of any kind or type in your possession or under your control related to the design, construction, implementation, operation and/or maintenance of any portion of the drainage and/or sewerage systems you allege in any way caused plaintiffs' damages.

RESPONSE TO REQUEST FOR PRODUCTION NO. 13:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 14:

Produce all documents that relate or refer to the boundaries of the levee and floodwall, as those terms are used in Paragraphs 41-45 of the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 14:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 15:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related specifically to allegations made by you in Paragraph 23 of the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 15:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 16:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related in any way to a possible combination, convergence or mixing of storm related surges, flooding and/or waters from the MRGO, Lake Borgne and/or the Industrial (IHNC) Canal within the interior boundaries of the Hurricane Protection System, including but not limited to any data, compilations of data or documents referencing the location of any failures or breaches of the Hurricane Protection System, the sources of any waters flowing through those failures or breaches, and hydrological or other data as to where those waters may have traveled within the interior boundaries of the Hurricane Protection System.

RESPONSE TO REQUEST FOR PRODUCTION NO. 16:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 17:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control in any way related to soil composition, soil analysis, soil testing, soil sampling, soil strength, pore pressure or other soil related measurements of the Hurricane Protection System.

RESPONSE TO REQUEST FOR PRODUCTION NO. 17:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 18:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control in any way related to soil composition, soil analysis, soil testing, soil sampling, soil strength, pore pressure or other soil related measurements of the Hurricane Protection System.

RESPONSE TO REQUEST FOR PRODUCTION NO. 18:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 19:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related to overtopping, scouring, under seepage or any other alleged failure mechanism, as those terms are used by you in the Complaint, of any portion of the Hurricane Protection System.

RESPONSE TO REQUEST FOR PRODUCTION NO. 19:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 20:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related to any contention or allegation that any

portion of the Hurricane Protection System either was, was not, or should have been, "armored," as alleged by you in the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 20:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 21:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related to any allegation that any MRGO Defendant failed in any duty to ensure that any portion of the Hurricane Protection System either was, was not, or should have been, "armored," as alleged by you in the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 21:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 22:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control relating in any way to the "Standard Project Hurricane" referenced by you in the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 22:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 23:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related to allegations made by you that the LBLD is "...responsible for the creation, maintenance and inspection of certain levees/floodwalls and/or spoil banks and water protection areas in St. Bernard Parish..."

RESPONSE TO REQUEST FOR PRODUCTION NO. 23:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 24:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related to allegations made by you that dredging at any time of any portion of the IHNC, the GIWW or the MRGO in any way caused or contributed to any of the damages referenced by you in the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 24:

See Plaintiffs' response to Request No.1, *supra*

REQUEST FOR PRODUCTION NO. 25:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related to the "MRGO Authorization Report," as referenced by you in the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 25:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 26:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related in any way to any and all "warnings of impending disaster" to any MRGO Defendant by any private person, government or other entity, as alleged by you in Paragraphs 32 through 35 of the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 26:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 27:

Produce any and all data, compilations of data, documents or other information of any kind or type related to the "accelerated/enhanced hurricane surge" and/or other specific allegations made by you in Paragraph 34 of the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 27:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 28:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related to allegations made by you in the Complaint against any MRGO Defendant, individually, for "nuisance."

RESPONSE TO REQUEST FOR PRODUCTION NO. 28:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 29:

Produce any and all data, compilations of data, documents or other information of any kind or type related specifically to allegations made by you against all MRGO Defendants in Paragraphs 39 through 50 of the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 29:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 30:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related to allegations made by you against the LBLD with respect to the authorization, design, construction, operation, maintenance, etc. of any portion or part of the 40 Arpent Canal, the Florida Walk Canal, the 40 Arpent Canal levees, the Florida Walk Canal Levees, or any other pertinent components of the Hurricane Protection System as referenced in the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 30:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 31:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related to any MRGO Defendant's "failure to ensure the use of proper materials" in constructing any levees, floodwalls, etc. as alleged by you in the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 31:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 32:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related to any MRGO Defendant's failure to preserve, maintain, rebuild, or otherwise exercise appropriate care for marshes and swamps to act as a buffer from storm surges.

RESPONSE TO REQUEST FOR PRODUCTION NO. 32:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 33:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related to allegations made by you that any MRGO Defendant failed to "adequately evaluate the potential damage to the levee and/or floodwall structure by storm surges," as alleged in the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 33:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 34:

Produce any and all data, compilations of data or other information of any kind or type in your possession or under your control related to allegations made by you that any MRGO Defendant failed to "correct known defects in the levee system," as alleged in the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 34:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 35:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related to allegations made by you that any MRGO Defendant failed to discharge its duty to maintain the integrity of the levee and/or floodwall system and to comply with Congressional and/or other legal mandates, as alleged in the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 35:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 36:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related to the "factual background of the navigation canals involved," as referenced specifically in Paragraphs 59, 60, 61 and 62 of the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 36:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 37:

Produce the 1965 United States Army Corps of Engineers "Report on Hurricane Betsy," as referenced specifically in Paragraph 61 of the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 37:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 38:

Produce any and all data, compilations of data, documents or other information of any kind or type related to the "Standard Project Hurricane," as referenced specifically in Paragraphs 63 through 74 of the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 38:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 39:

Produce any and all data, compilations of data, documents or other information of any kind or type relied upon by you for any allegations made against any MRGO Defendant specifically in Paragraphs 63 through 66 of the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 39:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 40:

Produce Engineering Regulation ER1 110-2-1453, as referenced specifically in Paragraph 64 of the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 40:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 41:

Produce Technical Report NWS 23, as referenced specifically in Paragraph 64 of the Complaint.

to the "High-Level Plan," as specifically referenced by you in Paragraphs 69 through 70 of the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 45:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 46:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related to any alleged violations by the United States Army Corps of Engineers of its "...own design, engineering and construction criteria for levees, floodwalls and/or spoil banks..." as specifically referenced by you in Paragraph 74 of the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 46:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 47:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related to allegations made by you of "negligence" against each and every MRGO Defendant, individually, as specifically referenced by you in Paragraph 75 of the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 47:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 48:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control related to any allegations made by you of "strict liability" against each and every MRGO Defendant, individually, as specifically referenced by you in Paragraphs 15(f) and 77 of the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 48:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 49:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control supporting your plea of "Res Ipsa Loquitur" against any MRGO Defendant, individually, as specifically referenced by you in Paragraph 79 of the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 49:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 50:

Produce any and all "IPET" data, compilations of data, documents or other information of any kind or type in your possession or under your control related to the underlying litigation and/or Hurricanes Katrina and/or Rita.

RESPONSE TO REQUEST FOR PRODUCTION NO. 50:

Plaintiffs specifically object to any discovery of common liability issues relating to Hurricane Rita. Without waiving that objection, Plaintiffs respond: See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 51:

Produce any and all "Independent Levee Investigation Team" data, compilations of data, documents or other information or any kind or type in your possession or under your control related to the underlying litigation and/or Hurricanes Katrina and/or Rita.

RESPONSE TO REQUEST FOR PRODUCTION NO. 51:

Plaintiffs specifically object to any discovery of common liability issues relating to Hurricane Rita. Without waiving that objection, Plaintiffs respond: See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 52:

Produce any and all "Team Louisiana" data, compilations of data, documents or other information of any kind or type in your possession or under your control related to the underlying litigation and/or Hurricanes Katrina and/or Rita.

RESPONSE TO REQUEST FOR PRODUCTION NO. 52:

Plaintiffs specifically object to any discovery of common liability issues relating to Hurricane Rita. Without waiving that objection, Plaintiffs respond: See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 53:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control, including but not limited to audio and visual media, relating to the condition of the levees and floodwalls along IHNC/Industrial Canal, MRGO, and/or GIWW prior to August 29, 2005

RESPONSE TO REQUEST FOR PRODUCTION NO. 53:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 54:

Produce any and all data, compilations of data, documents or other information, including but not limited to audio and visual media, of any kind or type in your possession or under your control relating to the condition of the levees and floodwalls along the IHNC/Industrial Canal, MRGO,

and/or GIWW on August 29, 2005 (including but not limited to any such materials depicting the actual overtopping, breach, and/or failure of the levees and/or floodwalls in those areas).

RESPONSE TO REQUEST FOR PRODUCTION NO. 54:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 55:

Produce any and all data, compilations of data, documents or other information, including but not limited to audio and visual media, of any kind or type in your possession or under your control relating to the condition of the levees and floodwalls along IHNC/Industrial Canal, MRGO, and/or GIWW after August 29, 2005, but prior to September 24, 2005.

RESPONSE TO REQUEST FOR PRODUCTION NO. 55:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 56:

Produce any and all data, compilations of data, documents or other information, including but not limited to audio and visual media, of any kind or type in your possession or under your control related to the condition of the levees and floodwalls along the IHNC, MRGO and/or GIWW after September 24, 2005.

RESPONSE TO REQUEST FOR PRODUCTION NO. 56:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 57:

Produce any and all data, compilations of data, documents or other information of any kind or type in your possession or under your control, including but not limited to audio and visual media, that discuss, analyze, depict, illustrate, simulate or otherwise reflect the depths of any flooding or waters, originating from any breach, overtopping or other failure of any portion of the Hurricane

Protection System, within the geographical areas encompassed by the New Orleans East Sub-Class and the Lower Ninth Ward and St. Bernard Sub-Class on or after August 29, 2005.

RESPONSE TO REQUEST FOR PRODUCTION NO. 57:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 58:

Produce any and all data, compilations of data, documents or other information of any kind or type, including but not limited to audio and visual media, that discuss, analyze, depict, illustrate, simulate or otherwise reflect the duration of any flooding from waters, originating from any breach, overtopping or other failure of the Hurricane Protection System, within the geographical areas encompassed by the New Orleans East Sub-Class and the Lower Ninth Ward and St. Bernard Sub-Class on or after August 29, 2005.

RESPONSE TO REQUEST FOR PRODUCTION NO. 58:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 59:

Produce any and all "independent studies," as referenced specifically by you in Paragraph 52 of the Complaint.

RESPONSE TO REQUEST FOR PRODUCTION NO. 59:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 60:

Produce all documents, exhibits or other materials regarding any reports, complaints, concerns, or evidence of any kind regarding ponding or pooling of water, leaks, and/or sand boils on any residential and/or commercial property located near the IHNC, GIWW and/or MRGO prior to August 29, 2005.

RESPONSE TO REQUEST FOR PRODUCTION NO. 60:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 61:

Produce all documents, exhibits or other materials regarding any assessments, complaints, problems, flaws and/or concerns of any kind expressed to any MRGO Defendant at any time by any person(s) or entities relating to the design, construction, maintenance, monitoring or inspection of the levees, floodwalls or other structures along the IHNC and/or the MRGO prior to August 29, 2005.

RESPONSE TO REQUEST FOR PRODUCTION NO. 61:

See Plaintiffs' response to Request No.1, *supra*.

REQUEST FOR PRODUCTION NO. 62:

Produce any and all documents relating to the depths of any flood water and/or the duration of any floods resulting from tropical storms, hurricanes and/or rain events within the geographical areas encompassed by the New Orleans East Sub-Class and the Lower Ninth Ward and St. Bernard Sub-Classes prior to August 29, 2005

RESPONSE TO REQUEST FOR PRODUCTION NO. 62:


See Plaintiffs' response to Request No.1, *supra*.

RESPONSES TO REQUEST FOR ADMISSIONS

REQUEST FOR ADMISSION NO. 1:

Admit that at no time relevant hereto did the LBLD have responsibility for, or control over, the authorization, specification, design or construction of any part or lift of the Hurricane Protection System alleged by you in the Complaint to have failed and/or caused damage.

EXHIBIT I



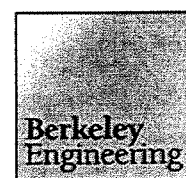
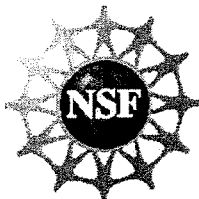
Investigation of the Performance of the New Orleans Flood Protection Systems in Hurricane Katrina on August 29, 2005

Volume I: Main Text and Executive Summary

by

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surge to flow virtually unimpeded across the open swampland before the storm surge had begun to subside significantly.

The Forty Arpent levee was only a "secondary" levee, with crest heights on the order of Elev. + 7.5 to + 10 feet (MSL), and it was not intended to have to face the full brunt of a largely undiminished rising storm surge. As a result, the storm surge passed easily over this secondary levee, and pushed rapidly into the populated areas of St. Bernard Parish, as described previously in Chapter 2. As it arrived rapidly, and prior to significant abatement of the storm surge, the floodwaters ponded to an unexpectedly high elevation of approximately +12 feet above mean sea level. Homes and businesses on "high ground" (at elevations several feet and more above sea level) were thus unexpectedly flooded, and the depth of flooding in lower-lying areas was especially severe. The massive intruding floodwaters also had large lateral force, and pushed homes aside from their foundations (as shown previously in Figure 2.19), tossed cars like toys (see Figure 6.15), deposited large fishing boats in residential neighborhoods (Figure 6.16), and left large branches of trees on the roofs of numerous homes (e.g.: Figure 6.17).

Interestingly, the smaller (secondary) Forty Arpent levee was severely overtopped along much of its length, but it suffered relatively little erosional damage as a result. This appears to be because it was constructed of significantly better materials than the outer (MRGO frontage) levees; the Forty Arpent levee appears to have been constructed primarily of clay, with good intrinsic resistance to erosion. Figure 6.14 shows a section of the Forty Arpent levee that was apparently significantly overtopped, but which suffered only slight "cosmetic" erosional damage as a result.

The use of highly erodeable sand and shell sand fill was unfortunate along the exposed MRGO frontage levee section, and the consequences were severe. Damage to the populated areas of St. Bernard Parish was catastrophic, and the floodwaters from this populous area next began to make their way westwards towards what was now the already doomed Lower Ninth Ward.

6.3 The Two large Breaches on the East Bank of the IHNC at the Lower Ninth Ward

As the storm surge from Lake Borgne pushed westward along the east-west trending channel of the GIWW/MRGO that separates the St. Bernard and New Orleans East protected basins, it raised the water levels in the IHNC and produced two massive breaches on the east bank of the IHNC (at the western edge of the Lower Ninth Ward). These two breaches occurred at approximately 7:30 to 7:45 a.m., at an IHNC water level of approximately Elev. + 14 to +14.5 feet (MSL), as shown in Figure 6.18 (which shows a hydrograph of measured water levels vs. time in the IHNC channel.)

6.3.1 The IHNC East Bank (South) Breach at the Lower Ninth Ward

The larger of these two breaches was the south breach, and this is shown in Figure 6.19 (which is a repeat of Figure 2.13). This was a very long breach, nearly 900 feet in length, and the intruding waters entered the adjacent community with great force. As shown

in Figure 6.17, homes for several blocks were ripped from their foundations and scattered, usually in splinters, eastward across the inboard neighborhood.

Figure 6.19 also shows the sheetpile curtain that had supported the floodwall at the crest of the earthen levee at this section. It is interesting to note that the sheetpiles (which were cold-rolled steel sections) remained interlocked throughout the cataclysmic failure and the ensuing hydrodynamic loading of the massive intruding floodwaters. The concrete floodwall is largely absent from the tops of these sheetpiles, as the sheetpiles have been stretched out (like an accordion), flattening their bent flanges in order to accommodate the extension imposed on them by the intruding flow.

Figure 6.19 also shows a large steel barge that passed inward through this section, and came to rest near the southern end of the breach. This raised the question as to which came first; the barge or the breach?

Figure 6.20 shows the large barge, in its final resting position (prior to being cut apart with torches to remove it) atop a small yellow bus. This was not the initial resting location of this barge immediately after hurricane Katrina, however. Initially, after Katrina, the barge had come to rest a bit farther to the east. It was then re-floated several weeks later when the temporary breach repair failed during the second hurricane surge produced by hurricane Rita on September 24, 2005 (see Chapter 11), and came to rest at its current position at that time. The small yellow school bus also arrived between hurricanes Katrina and Rita, having been appropriated and used for interim transport and then abandoned in its location as shown.

There is a single large dent low on the side of the barge just around the left side of the bow (not quite visible in Figure 6.20), and a pronounced scrape on the bottom of the barge at that same location. Most of the concrete floodwall was failed in extension and flexure, with its reinforcing steel (rebar) fairly extended. There was one single section of wall which clearly evinced a major impact, however, and that was at the extreme southern end of the breach. Figure 6.21 shows a close-up view of the floodwall at this location. The rebar is compressed and bent, and the concrete crushed at this location. It was the consensus view of our investigation team that the barge had scraped along the wall and then impacted the end of the wall at this location.

As this was the extreme southern end of the very long breach; this impact was not the cause of the breach and failure. Instead, the barge was apparently traveling southwards along the IHNC (driven by the prevailing storm winds at that time) and was drawn into the breach by the inflowing waters. The barge did not enter cleanly into the breach, but struck at the south end before passing in.

That does not mean that the barge might not have struck the floodwall twice (or more times) before finally impacting the southern end of the breach, but our investigation's view is that there are other modes of failure that would have been expected to fail this section without any need for help from the barge, so that the likelihood is that the barge slipped its moorings and was eventually drawn in through a breach that was already well developed.

Figure 6.22 shows the trench that was eroded by water that passed over the top of the concrete floodwall at the south end of the large breach. (The barge can be seen at the right in this photo.) Overtopping and scour occurred at both ends of this breach feature, and the resulting scoured trenches reached depths of up to 5.5 feet in sections that did not subsequently fail. It is, of course, not possible to determine whether deeper scouring/trenching might have occurred at the actual breach inception location, as the embankment and foundation soils at the center of the breach were deeply scoured out by the massive flows in through the breach. One of the potential failure modes evaluated by our (ILIT) studies was the possibility that this scour had sufficiently laterally unbraced the concrete floodwall (and its supporting sheetpile curtain) that the lateral force of the elevated canal water was able to displace it laterals and foment a resulting breach.

Figure 6.23 shows our ILIT re-interpretation of the original boring data along this section of the east bank of the IHNC, with the locations of the two large breaches indicated. The boring data was far too sparse along this section for the importance of the design (the inboard population and properties being protected) and for the complexity of the local geology. In addition, widely spaced borings along the approximate levee centerline do not provide an adequate basis for development of appropriate cross-sections for analysis and design. An effort was made to perform pairs of borings (one roughly at the crest and another at the inboard toe) at selected locations so that cross-sections could at least be attempted, but this was still an inadequately sparse investigation. The foundation investigation for the design of these levees and floodwalls was inadequate for a project of this scope and importance, and the minor savings in drilling, sampling and testing are now dwarfed by the massive costs of the failures that resulted; both property damages and loss of life.

Figure 6.24 shows the cross-section used for our analyses of this south breach. The two pre-Katrina ("initial design") borings, Borings B-4 and B-4T, were supplemented by three additional CPT probes performed by the IPET investigation (IHBR-6.05C, 5.05C and 16.05C), and two additional borings and a CPTU probe that were performed by our ILIT investigation (Borings IHNC-S-BOR-1 and CON-1, and CPTU IHNC-S-CPT-1). The cross-section of Figure 6.24 shows the tragic failure to extend the sheetpile curtain to sufficient depth as to cut off underseepage flow through the laterally pervious "marsh" deposits at this site.

The upper embankment fill is a moderately compacted imported clay, which is underlain by an older "fat clay" (CH) fill apparently comprised of locally available lacustrine clays. The upper foundation soils are then dominated by thick deposits of high plasticity clays (CH), punctuated by two layers of marsh deposits, and there is a relatively thin but continuous stratum of low plasticity silt (ML) underlying the lower marsh unit.

Subsequent to the completion of the levee embankment and floodwall, additional sandy fill was placed on the outboard (water) side of the levee to raise the ground surface slightly above mean canal water level. Some buildings and facilities had been constructed on this made ground, but these had been removed prior to hurricane Katrina.

Figure 6.25 shows plots of data regarding strength properties vs. depth for the soils from the silt layer down (from Elevations -19 to -50 feet, MSL) beneath (a) the levee crest,

and (b) at the inboard toe of the levee (under far lesser embankment overburden). The detailed procedures and relationships used to process the CPTU data, and then to overlay the additional UUTX data to develop these plots, are presented and discussed in detail in Chapter 8, and this will not be repeated here. The lower unit of lacustrine clay clearly shows two overconsolidation "crusts" as a result of surface desiccation during early "stands" in the accretion of these deposits, and they are more normally consolidated at greater depth. These clays, in the end, do not appear to have participated in the failure that occurred.

Similarly, the relatively thin silt stratum (ML) also shows evidence of overconsolidation, and this gives it sufficient strength that it too is uninvolved the failure.

Figure 6.26 shows similar plots regarding strength properties of the far more critical upper foundation soil strata between elevations of approximately +0 to -20 feet (MSL). These deposits, consisting of interlayered marsh and clay units, are the critical soils at this site.

As described in detail in Chapter 8, a number of different approaches were taken to the processing of the available field and laboratory test data in order to evaluate and characterize these soils. Based on the CPTU measurements within the marsh deposits (both at this site, and at the 17th Street canal breach site) values of B_q were developed, and then based on the relationships of Lunne et al. (1994) and Karlsrud et al. (1996), a value of $N_{kt} = 15$ was selected for transposing the CPTU tip resistance values to the estimates of undrained shear strength that are plotted in Figure 6.26. The resulting values were then converted to values of S_u/P as shown in the far right figure of Figure 6.26, and these appear to infer three desiccation-induced overconsolidation profiles corresponding to surface exposure at three times during the evolution of these deposits. The relationship of Mayne and Mitchell (1988) was then used, again as described in Chapter 8, to cross-check the resulting relationship between S_u/P vs. OCR as a function of Plasticity Index (PI, %) for these deposits using the available UUTX laboratory test data. These were found to be consistent. Finally, the limited available in situ vane shear test data, and the UUTX laboratory test data, was co-plotted with the CPTU-based strengths, and these too were judged to be consistent (with allowances for sample disturbance and vane insertion disturbance in these soils of variable fibrous organic content).

Similar processing resulted in selection of a value of $N_{kt} = 15$ for processing of the CPTU data for the silty clay (CH/CL) stratum lying between the two "marsh" deposits. This differs from the value of $N_{kt} = 12$ that was used to process the CPTU data for the deeper layer of gray lacustrine clay of high plasticity, and it reflects the lower plasticity of this upper clay unit. Once again, the limited available in situ vane shear test data and UUTX laboratory test data were then co-plotted with the strengths as interpreted by the CPTU, and were found to be consistent (as shown).

Figure 6.27 shows the geometry and principal input parameters used to model and analyze this section using the finite element analysis program PLAXIS (2004). The "soft soil" constitutive model within PLAXIS was used to model all of the uppermost soil strata, so that both undrained and partially drained conditions could be studied within an effective stress framework. Shear strengths from Figures 6.25 and 6.26 were reduced by 15% in the marsh strata, and by 20% in the clay strata, to account for differences between the field (in situ) test

conditions and the laboratory test conditions, and the direct simple shear (DSS) conditions expected to dominate the critical field performance behavior in these analyses.

Initial analyses were performed to model the incremental construction of the levee embankments in order to establish the initial stress conditions for the subsequent analyses of the overall section performance and stability during hurricane Katrina's storm surge loading. Figure 6.28 shows the deformed mesh at the end of staged construction and consolidation under the levee embankment loads. Overconsolidation stress profiles beneath the crest, and beneath the inboard levee toe, well matched those from the available field data, and the consolidation properties were iterated slightly until the final (post-consolidation) settled profile matched well with the observed field configuration.

Analyses were then performed in which the water level within the canal was progressively raised. Transmission of pore pressures beneath the wall (and beneath the sheetpiles) was very rapid, and nearly "steady state" pore pressure conditions developed very rapidly beneath the inboard side of the levee after each increase in water levels as the lateral transmissivity of the marsh deposits was high, and the system was initially well saturated. The rate of water level rise (and subsequent decline) in the canal was based on the hydrograph of Figure 6.18.

Figure 6.30 shows conditions calculated just as the canal water level reached the top of the concrete floodwall. Plotted in this figure (as color contours) are levels of relative shear strain (shear strain developed, divided by shear strain to failure) within the levee embankment and foundation soils. As shown clearly in this figure, two distinct failure mechanisms are beginning to develop. The lower one is a shear surface concentrated at the interface between the base of the upper gray clay (CH/CL) layer and the underlying layer of marsh deposits, and the upper failure surface attempting to develop is concentrated at the interface between the top of the upper marsh stratum and the lower levee embankment fill section. Both of these mechanisms represent the results of underseepage-induced increases in pore pressures being "trapped" at the bases of less pervious overlying strata. These pore pressure increases are decreasing the strength and stiffness of the soils at these two critical interfaces.

At the water stage shown in Figure 6.30, a gap has begun to form at the outboard side of the floodwall and its supporting sheetpile curtain. When effective tensile stress was calculated between the floodwall/sheetpile wall and the adjacent soils, the analysis was temporarily stopped, the tension was eliminated by changing the mesh details to insert a small gap (and to insert hydrostatic water pressures within the gap), and the analysis was resumed. This was done iteratively, as water levels continued to rise, so that the progressive development of a water-filled gap between the floodwall/sheetpile curtain and the outboard section of the levee embankment could be modeled. At this section, within reasonable parameter variations modeled, gap formation generally initiated at canal water levels on the order of Elev. +11.5 to +13 feet (MSL), and the gap then tended to progress fairly rapidly to the base of the sheetpiles (within the next 1 to 2 feet of water level rise in the canal).

Figure 6.31 shows calculated conditions for a canal water level at Elev. +14 feet (MSL). At this stage, water is now overtopping the floodwall, the gap at the outboard side of the sheetpile wall is developed to full depth, and stability failure is occurring on the

uppermost of the two potential failure surfaces. This upper failure is serving to "protect" against further development of the lower failure surface (which can also be seen in this figure.) If the upper failure surface is strengthened a bit, to prevent the upper failure, then the lower failure becomes critical.

Figure 6.32 shows the postulated path to failure based on the finite element (PLAXIS) analyses performed. In this figure, the Factor of Safety at any given surge height was assessed by stopping the analysis at each stage of water level rise, and evaluating Factor of Safety by means of progressive $c - \phi$ reduction. Two sets of conditions were analyzed; conditions in which a "gap" was allowed to form on the outboard side of the sheetpile/floodwall (and the gap was allowed to fill with water as it opened), and a second set of analyses without allowing the opening of this gap. The light blue diamonds in Figure 6.32 represent conditions without gapping, and the yellow circles represent conditions with progressive opening of a water-filled gap.

As shown in this figure, the gap begins to open as the storm surge rises near to the top of the floodwall (at a surge elevation of about +11 to +12 feet, MSL), and the increasing lateral push of the rising surge waters finally destabilizes the system at a surge elevation of approximately +12 to +13 feet, MSL. This appears to agree closely with the observed field timing and surge levels at failure.

These analyses also include the "excavation" of a trench at the levee crest at the rear side of the floodwall representing the results of overtopping erosion at the north and south ends of the breach. The depth of this eroded trench was taken as rapidly increasing from none to 5 feet in depth as overtopping began to pass over the top of the floodwall. Additional analyses were performed for eroded trench depths of up to 7.5 feet, but this did not significantly affect the overall results; simple erosion of a scoured trench behind the floodwall, even as deep as 7.5 feet, was not sufficient as to cause the observed failure and breaching of this levee/floodwall section. The scoured trench behind the floodwall did contribute a bit to the enhancement of lateral displacement (and resultant water-filled gapping) on the outboard side, but it does not appear to have been the principal factor at this failure and breach site.

Additional analyses were performed to further evaluate both the seepage flow vs. time, and the overall stability of this levee and floodwall section. Seepage analyses, as well as conventional Limit Equilibrium analyses (by several methods, but these agreed closely and results presented herein are for Spencer's Method) were performed using the program package GEO-SLOPE/W.

Figures 6.33 and 6.34 show the cross-sections and meshes used for conventional limit equilibrium and coupled seepage analyses of this same breach section. As shown in Figure 6.35, the rapid lateral flow through the main marsh stratum distorts the flownet, carrying pressures and equipotential contours along as it passes beneath the embankment. Figure 6.36 shows a close-up view of calculated pore pressure contours for a storm surge elevation of +14 feet (MSL). Over a considerable area at and inboard of the levee toe the net pore pressure uplift forces are slightly greater than the weight of the relatively light soils present, representing conditions prone to potential "uplift" or "blowout" at this critical location.

Figure 6.37 shows a close-up view of hydraulic gradients at this same canal surge stage. As expected, the exit gradients calculated at the toe are slightly unstable with regard to initiation of seepage erosion and piping for the relatively lightweight soils present.

A key question in these analyses is the rate at which rises in outboard side canal water levels manifest themselves in the form of increased pore pressures beneath the inboard side of the levee embankment. That, in turn, is largely a function of the lateral permeability modeled within the marsh strata, and assumptions regarding degree of initial saturation.

It was our investigation team's observation that lateral permeability was very high within at least some of the sub-strata of these variable marsh deposits, both at the two east bank IHNC breach sites at the edge of the Lower Ninth Ward, as well as at sites along the drainage canals at the north end of the main (downtown) New Orleans protected basin. Hydraulic response at nearby boreholes was very rapid, and evidence of the occurrence of high water pressures and underseepage was noted at several locations. Investigators from the IPET team were surprised by difficulties in dewatering a very shallow excavation to recover large block samples of peaty "marsh" deposits at the 17th Street canal breach site for subsequent centrifuge testing. In addition, persistent reports of underseepage and ponding of waters along this IHNC frontage at the west edge of the Lower Ninth Ward, and contractor's significant problems with dewatering of excavations along this same frontage, all bespoke of high lateral permeability within these strata.

The values of lateral permeability used in these analyses were based on experience with similar geologic units from other regions, our own field observations, and the accumulated reports indicating high lateral permeability. A best-estimated coefficient of lateral permeability of $k_h \approx 10^{-2}$ cm/sec was modeled for the most open of the marsh sub-strata, and parametric sensitivity analyses were performed for values of k_h that were five times higher, and values that were an order of magnitude (factor of 10) lower.

Figures 6.38 and 6.39 show results of these sensitivity analyses. Transient flow analyses were performed in which canal water levels were raised progressively, beginning with assumed fully equilibrated ("steady state") conditions with a canal water elevation of about +5 feet (MSL) at ~11:00 p.m. on the night of August 28th (after many hours of relatively slow surge rise to that level), then rising progressively to elevation +9 feet (MSL) by about 3:30 a.m. on the morning of August 29th, and then rising a bit more rapidly to elevation +14.4 feet (MSL) by about 8:30 a.m. (It should be noted that the failure and breach occurred at about 7:45 a.m., but that these transient flow analyses were carried forward to at least 9:00 a.m. to more fully examine progressive flow and pore pressure development.)

Figure 6.38 shows calculated pore pressures vs. time at location 1, at the top of the lower marsh stratum, directly below arrow "D" near the inboard toe of Figures 6.35 through 6.37. The horizontal light blue line at the top of this figure represents the "steady state" conditions that would eventually develop for a canal water level rise to Elevation +14.4 feet (MSL) if infinite time were allowed for full equilibration and development of steady state flow. The lower diamonds represent calculated transient pore pressures at Location 1 for the best-estimated lateral permeability of the marsh deposits, and for the upper and lower bound permeabilities. As shown in this figure, the variation in permeability does not exert a major

influence on the pore pressures, given the relatively slow rate of canal water level rise, and pore pressures within the main marsh deposit at the base of the inboard levee toe are on the order of about 85% to 92% of full "steady state" pressures at the apparent time of failure (at about 7:45 a.m.)

Figure 6.39 shows similar transient flow analyses to calculate pore pressure development at various depths beneath the location of arrow "D" in Figures 6.35 through 6.37, using the best-estimated permeabilities. Again, pore pressure development is fairly rapid, and lags only moderately behind outboard side canal water level rise.

Figure 6.40 shows the calculated gradients at the top of the lower marsh stratum (the blue line) at about 7:45 a.m., based on best-estimated permeabilities, and the exit gradients at this time as well (the red line.) The toe exit gradients are marginally unstable, given the lightweight materials present, and represent conditions likely to give rise to the inception of piping erosion.

Figure 6.41 shows the progressive development of pore pressures at the top of the lower marsh stratum vs. time. As shown, there is a considerable area over which the hydraulic uplift forces progressively grow to become somewhat larger than the total overburden stresses; representing a condition that could lead to uplift and "blowout" at this location.

Finally, Figures 6.42 and 6.43 shows analyses of limit equilibrium (Spencer's Method) for failure surfaces passing (a) along the interface at the top of the upper marsh stratum, and (b) along the interface at the top of the (lower) main marsh stratum, for a canal water elevation of +14 feet (MSL). Both sections are marginally unstable at this condition with regard to lateral translation of the inboard portion of the levee embankment, pushed sideways by the outboard side canal water pressures (including a water-filled gap at the outboard side of the sheetpiles), and in both cases the foundation soil strengths have been critically reduced by underseepage-induced pore pressure increases.

Figures 6.42 and 6.43 likely overestimate the overall lateral translational stability at this stage of canal water level rise, as it is likely that piping erosion would have at least initiated at the inboard toe region by this stage, and the calculated hydraulic uplift pressures in the inboard toe region are high enough that "buckling" of the passive toe block helping to restrain the lateral translations of Figures 6.42 and 6.43 might further reduce the overall stability.

As shown by these analyses, as the canal water level rises above about + 13 to +14 feet (MSL) this section becomes analytically unstable by a number of potential mechanisms, all of them associated with underseepage flow passing beneath the sheetpile curtain. These potential mechanisms are:

1. Seepage erosion and piping due to excessive exit gradients at the inboard toe.
2. Hydraulic uplift or "blowout" at the inboard toe.

3. Translational stability failure, as a result of reduction in strength of the foundation soils at the inboard side due to underseepage-induced pore pressure increases.

Based on the length of the breach feature (approximately 900 feet), it is most likely that the mechanism that won the race to failure at this site was translational instability due to underseepage-induced pore pressure increases, and resulting strength reduction within the inboard side foundation soils. It is certainly possible, however, that all three mechanisms contributed at least in part. Figure 6.44 shows the postulated most likely path to failure, based on both the finite element and the coupled transient flow/limit equilibrium analyses. The postulated failure path proceeds up the "un-gapped" limit equilibrium path at the right of Figure 6.44 until a gap on the outboard side of the sheetpiles begins to open and fill with water at a canal water elevation of about +12 to +13 feet (MSL). The failure mechanism then transitions to the "water-filled gap" limit equilibrium case (the left-most line in Figure 6.44), and as the canal water level continues to rise the overall section becomes unstable (in underseepage-induced lateral translational foundation instability) at a canal water level of approximately +14 feet (MSL).

This contradicts the initial conclusions of the Draft Final Report by the IPET investigation (IPET; June 1, 2006), and also the initial hypotheses of the ASCE and NSF-sponsored field investigation teams; all of which favored the hypothesis that the failure and breach at this site had resulted from overtopping flow over the floodwall which eroded a trench along the back side of the wall (as shown previously in Figure 6.22), resulting in laterally unbracing the wall so that it was then pushed over by the surge water pressures on its outboard side.

Our investigation's view is that, while overtopping and trenching were in fact occurring, it was underseepage-induced instability that actually developed the more critical mechanism that led to failure at this site.

The depth of overtopping-induced trench erosion at the north and south shoulders of the breach never reached depths greater than 4.5 to 5 feet. It might be inferred that a low spot along the crest of the floodwall occurred at the breach location, and that somewhat deeper erosional trenching resulted, but our finite element analyses show that even excavation of a trench as deep as 7 to 8 feet by overtopping erosion does not sufficiently unbrace the wall as to foment a lateral wall failure at surge heights overtopping the wall by as much as 1.5 feet. Instead, the contribution of overtopping and erosion of a trench at the inboard toe of the floodwall was more likely to have, at best, slightly accelerated the timing of this failure by adding to the propensity of the floodwall to deflect laterally slightly and thus develop a "gap" into which water could flow and then apply additional lateral pressure against the sheetpile curtain to promote the lateral translational stability of the inboard side of the levee embankment.

Our finite element analyses, performed with eroded "trenches" of various depths (from none, to as much as 8 feet) suggest that the trench erosion likely helped to exacerbate the initiation of "gapping" at the outboard side of the floodwall at a slightly lower canal water elevation than would have occurred without this erosion, but that it was not the critical contributor to this failure.

This is an important issue with regard to repair and reconstruction. The USACE has expended considerable effort and resources to replace "I-walls" with "T-walls", and to install concrete splash pads behind additional I-wall sections, in order to prevent failures due to the mechanism of overtopping, erosion of a trench at the rear side of the I-walls, and failure due to the resulting unbracing of the wall sections. Although also useful, this will not also deal effectively with the underseepage issues that appear to have been the actual cause of failure at this site; and there appear to be unreasonably short sheetpile curtains (insufficient as to effectively cut off underseepage flows) at other locations throughout the New Orleans regional flood defense system. This is a potentially pervasive problem throughout the system, and it should be evaluated system-wide, and remedied as necessary.

The IPET Final Draft Report notes that possible modes of failure initially considered at this site included "sliding instability and piping and erosion from underseepage." The report then goes on to say

Piping erosion from underseepage is unlikely because the I-walls were founded in a clay levee fill, a marsh layer made up of organics, clay and silt, and a clay layer. Because of the thickness, the low permeabilities of these materials, and the relatively short duration of the storm, this failure mode was considered not likely and was eliminated as a possible mode of failure.

This greatly underestimates the permeability, and especially the laterally permeability of the marsh deposits. It also continues the very dangerous assumption that underseepage was not a serious problem for "short duration" storm surge loading that plagued the original design of many sections of the New Orleans regional flood defense system, and led to use of sheetpile curtains that were far too short to effectively (and safely) cut off underseepage flows. At least four major failures (and breaches) that caused large portions of the overall flooding damage and loss of life during hurricane Katrina appear to have been principally due to lack of appreciation of underseepage, and resulting inadequate (short) sheetpile cut-offs. These are the major breach at the west bank near the north end of the London Avenue drainage canal (see Section 8.3.9), the major breach at the east bank of the London Avenue drainage canal farther to the south (see Section 8.3.8), and the two breaches on the east bank of the IHNC at the west end of the Lower Ninth Ward discussed in this current section and in Section 6.3.2. Exoneration, a priori, of underseepage dangers should be discontinued immediately, and underseepage analyses should be required for the full regional flood protection system.

Demonstration that underseepage occurred at this site can be based on arguments of analogous conditions and levee performance at this site, and at the London Avenue drainage canal breach sites, as well as at the site immediately to the north (as described in the next section.) It can also be based on the observed difficulties encountered by McElwee Construction in dewatering an excavation near the breach site immediately to the north (due to massive underseepage flow through the marsh deposits that were not adequately cut off at that site either.)

In addition, as noted in the IPET Draft Final Report in discussion of the two massive breaches at the west end of the Lower Ninth Ward:

Although it is clear that the walls were overtopped, and that their stability was compromised by the erosion that occurred, it is also clear that one of the east side breaches occurred before the wall was overtopped. Eyewitness reports indicate that the water level in the 9th ward near Florida Avenue was rising as early as 5:00 AM, when the water level in the IHNC was still below the top of the floodwall. Stability analyses indicate that foundation instability would occur before overtopping at the north breach on the east side of the IHNC. This breach location is thus the likely source of the early flooding in the 9th Ward. Stability analyses indicate that the other three breach locations would not have failed before they were overtopped.

Unfortunately, even IPET's own analyses do not suggest a high likelihood of failure of the north breach section at the canal water levels present as early as 5:00 a.m. (approximately Elev. + 9 feet, MSL), so this would not appear to be the explanation for the observed water in the neighborhood. Instead, it is proposed that the observed water rise on the inboard (protected) side near Florida Avenue was more likely the result of large underseepage flows through the highly pervious "marsh" deposits along this frontage.

Finally, clear and uncompromising evidence of the high lateral permeability of these deposits at this site is presented in Figure 6.45, which shows a well-developed classic crevasse splay that resulted from reverse underseepage through these same highly pervious marsh deposits as the ponded floodwaters drained out from the Lower Ninth Ward after the hurricane passed.

The New Orleans District of the USACE must stop "assuming" that short-term storm surges do not pose a significant risk associated with underseepage, and should instead begin assuming that such underseepage is a potential risk and that it must be addressed either: (1) with testing and analyses, (2) by means of sheetpile curtains extended deeply enough to effectively cut off potentially dangerous underseepage, or (3) by means of wider and heavier levee embankments (including inboard side stability berms) and the use of filtered drains at the inboard toe of the levee to "vent" and thus draw down the potentially dangerous pore pressures in that vicinity.

6.3.2 The IHNC East Bank (North) Breach at the Lower Ninth Ward

Figure 6.46 shows an aerial view of the partially repaired breach that occurred just to the north of the breach discussed in the preceding Section 6.3.1. This second breach feature was a much shorter feature, with a length of only approximately 250 feet.

This narrower, deep failure had similar initial geometry and stratigraphy to that of the far longer section immediately to its south, as shown by the cross-section in Figure 6.47. At this section, there is only the one main marsh layer, but most of the other soil conditions are very similar to those at the adjacent breach section to the south.

Figures 6.47 and 6.48 show the cross-section and finite element mesh used for limit equilibrium and coupled seepage analyses of this section.

Soils data at this site were sparse, and consisted of a single pre-Katrina boring (located nearby but just off-site, and with higher embankment overburden loads than at the breach site), two ILIT borings and one ILIT CPTU probe, and several additional IPET CPT probes. We were never able to fully determine the locations of the IPET CPT's in plan view, but it was assumed that they were located in adequate proximity as to be "representative", and their elevations were known with good precision so that these data could be used to at least cross-check the other data available. Cross-checking the limited data (mainly from two CPTU probes) with the data from the breach site immediately to the south showed strong compatibility; accordingly similar properties (and OCR profiles, etc.) were modeled for similar soil units at this section.

Figure 6.49 shows the calculated flownet equipotential lines for a canal water surge elevation of +14 feet (MSL). Once again, as with the larger breach just to the south, the flow travels through the continuous marsh layer that was left frustratingly open to flow by the shallow sheetpiles that were an inadequate cut-off at this site.

Figure 6.50 shows pore pressure contours for the same conditions as Figure 6.49. Once again the hydraulic uplift pressures represent potential instability with regard to lifting or "blowout" of the thin surficial strata of impervious and relatively lightweight soils overlying the marsh stratum at and near the inboard toe.

Similarly, as shown in Figure 6.51, seepage exit gradients at and near the inboard toe are massively unsafe with regard to the initiation of seepage erosion and piping in these relatively lightweight soils.

And finally, as with the adjacent breach section to the south, the section is also marginally unstable with regard to limit equilibrium (Spencer's method), as shown in Figure 6.52, as a result of underseepage-induced pore pressures and resultant loss of strength. The most critical failure surface this time passes through (and largely within) the main marsh layer, though a secondary failure surface concentrated near the interface between this marsh layer and the overlying clay layer has a nearly similar (unstable) factor of safety.

Figures 6.53 and 6.54 show calculated transient pore pressures (6.53) at the top of the marsh stratum beneath the inboard toe of the levee, and (6.54) at various depths beneath the inboard levee toe. As for the breach section immediately to the south, the upper and lower bound lateral permeability estimates are also shown in Figure 6.53; and again a large fraction of the overall rise in canal water levels has resulted in corollary water pressure increases at the inboard toe region by about 7:00 to 8:00 a.m.

Figure 6.55 shows the progressive increase in pore pressure at the top of the marsh stratum vs. time, and the pore pressures are high enough to pose a very high risk of hydraulic uplift (or "blowout") at the inboard toe region.

Figure 6.56 shows a potential path to failure by means of lateral translational foundation instability; reaching a condition of marginal lateral instability (with full

development of a water-filled gap at the outboard side of the sheetpile curtain) at a canal water elevation of approximately +13 to +14 feet (MSL).

Here again, as with the larger breach section immediately to the south, this breach section is analytically unstable by a number of potential mechanisms, all of them associated with underseepage flow passing beneath the sheetpile curtain. These potential mechanisms are:

1. Seepage erosion and piping due to excessive exit gradients at the inboard toe.
2. Hydraulic uplift or "blowout" at the inboard toe.
3. Translational stability failure, as a result of reduction in strength of the foundation soils at the inboard side due to underseepage-induced pore pressure increases.

As with the larger breach to the south, it is our investigation's position that despite the fact that overtopping (and resultant erosion at the inboard toe of the floodwall) was also occurring, this failure was the result of one or more of the underseepage-induced mechanisms above. (Two or more of these may have acted in concert.)

This site has a well-documented history of underseepage problems; McElwee Construction had great difficulty dewatering an excavation at this site during earlier construction, and residents of the neighborhood had also previously reported problems with seepage at the inboard toe.

Based on the geometry of the post-failure configuration (see Figure 6.46), this narrow, deep failure appears to have most likely caused by either by seepage erosion and piping, or by a combination of hydraulic uplift ("blowout") followed by piping. The calculated high exit gradients, and the hydraulic uplift pressures at the inboard toe region, would strongly support this.

The IPET interim draft report also concluded that foundation instability was the cause of the failure and breach at this site. The failure mechanism favored in those analyses, however, was based on a semi-rotational failure dominated by undrained shear failure through the soft clays underlying the marsh stratum, as shown in Figure 6.58. IPET concluded that this failure occurred at a relatively early stage, at a canal water level of only Elevation +9 feet (MSL), and that this early failure accounted for observations of ponding of water along this general levee frontage well in advance of the failure of the larger breach section to the south.

Figure 6.59 shows the IPET interpretation of shear strength data for this section, and the red lines are the IPET shear strength profiles for stability analyses (IPET: June 1, 2006.) In this figure, the values of undrained shear strength based on the CPT tip resistance data are based on a CPT tip factor of $N_k = 15$. This appears to be an overly conservative value of N_k within the lower clay stratum, as the CPT-based shear strengths within this stratum are significantly lower than the trend based on the unconsolidated-undrained triaxial tests on "undisturbed" samples obtained with a 5-inch diameter thin-walled fixed-piston sampler. In

any case, the shear strength profile used by the IPET analyses within this layer is well to the left (lower than) the vast majority of the data available.

Our own studies determined (based on B_q values from the CPTU) indicated that values of $N_{kt} = 12$ were more appropriate for this lower soft clay (CH) layer, and the resulting re-interpretation of this CPT data based on $N_{kt} = 12$ is shown (with a dark blue trace) superposed over the previous Figure 6.59 in Figure 6.60. Similarly, the dark blue lines in Figure 6.60 show our (ILIT) interpretation of the layering at this location, and the light blue dashed lines show our interpretations of shear strength vs. depth at this section. The IPET shear strength interpretation, in addition to being low, was also based on the assumption that this lower clay stratum was normally consolidated over its full depth. As shown previously in Figures 6.25 and 6.26, our own interpretations showed several clear desiccation-induced overconsolidation profiles near the middle and top of this clay layer, and additional moderate overconsolidation near the base (likely to the base being well-drained and thus partially overconsolidated due to secondary compression), and these are reflected in our ILIT shear strength profile. In this figure, the CPTU-based shear strengths (based on $N_{kt} = 12$) can be seen to be in better agreement with the other shear strength data, and the overall shear strength vs. depth profile is more consistent with this data.

Repetition of the limit equilibrium analysis (Spencer's Method) of the failure surface shown in Figure 6.58, but using our own (ILIT) interpretation of undrained shear strengths within the critical lower clay layer (Figure 6.60) results in a calculated factor of safety, even conservatively assuming the presence of a water-filled gap on the outboard side of the sheetpile curtain, of $FS = 1.89$. This underestimates the actual overall Factor of Safety, which should actually be on the order of 10% to 15% higher based on three-dimensional considerations for this narrow, deep failure. It is therefore not likely that a deep, semi-rotational failure occurred, early on and at a relatively low canal water level, at this site.

The need of the IPET analyses to provide an early failure at this north breach site in order to explain the significant observed ponding of waters along this frontage prior to the occurrence of the large breach farther to the south, and to do so without consideration of underseepage as a potential source of this water, resulted in an apparently unrealistic analysis and an indefensible failure mechanism.

If the IPET team had been made aware of the pervasive history of underseepage problems along this frontage, they would surely have considered and analyzed underseepage-related failure modes for the two large breaches along this section of the east bank of the IHNC. This information was apparently not available to the IPET analysis team, however, reflecting insufficient communication between groups and teams across the overly modular, sub-team-organized IPET studies. In addition, the pervasive failure of the New Orleans District of the USACE to adequately consider and analyze underseepage during pre-Katrina design of considerable portions of the regional flood protection system was continued in the post-event IPET studies of these two failed sections.

The New Orleans regional flood protection systems need to be thoroughly re-assessed, and re-analyzed as necessary, with regard to potential additional underseepage-related

vulnerabilities. And then these must be mitigated in order to develop a safe and reliable overall system..

6.3.3 Summary

The two large breaches on the east bank of the IHNC (at the west end of the Lower Ninth Ward) both occurred at sites where overtopping occurred. Despite the occurrence of overtopping, and resultant erosion of trenches at the inboard sides of the concrete floodwalls, this overtopping does not appear to have been the cause of the two failures. Instead, these two failures appear to have resulted from underseepage-induced instability; either due to erosion and piping at the inboard toe, "blowout", or translational instability due to strength reduction in the inboard side foundation soils due to underseepage-induced pore pressure increases.

This represents a potentially critical difference from the findings to date from the Corps' IPET study; as the remedy for overtopping, trench erosion, and unbracing at the top of the floodwalls is very different from the remedy for underseepage-induced instability problems. The USACE has invested large resources to replace "I-walls" with "T-walls", and to install concrete splash pads behind additional "I-wall" sections. This is laudible, but it will not also effectively mitigate underseepage-related problems.

Remedies for the underseepage related problems revealed by these analyses would include either extension of the sheetpile curtains to greater depths in order to more effectively "cut off" underseepage, or widening of the levee embankments to the inboard side and installation of filtered drains at the inboard toes in order to safely draw down the underseepage-induced high pore pressures in that area.

Analyses of the IHNC failure sections, and of sections of the three drainage canals in the main (downtown) New Orleans protected basin (see Chapter 8), have shown that unreasonably short sheetpile curtains of too limited penetration as to effectively cut off underseepage are likely to be endemic throughout many parts of the New Orleans regional flood protection system. Indeed, the USACE at a number of breach repair sites is replacing sheetpiles with (pre-Katrina) lengths of 18 to 24 feet with far longer (deeper penetrating) sheetpiles with lengths of 60 feet and greater as part of the repair operations; an unusually frank admission that significantly deeper sheetpiles were warranted at those sections.

There is now a need to review, and to re-analyze as necessary, essentially the entire regional flood protection system with regard to potential vulnerability associated with underseepage (and inadequately deep sheetpiles), and to remedy these problems at sites where necessary in order to ensure overall safety of the system.

6.4 Summary and Findings

The catastrophic flooding of the St. Bernard and Lower Ninth ward protected basin was primarily due to: (1) catastrophic erosion of the MRGO frontage levees, and (2) a pair of large failures (and breaches) on the east bank of the IHNC at the west end of the Lower Ninth Ward.

The catastrophic erosion of large portions of the nearly 11-mile long MRGO frontage levees was the result in large part of the use of unsuitable sand and shell sand fills (with low resistance to erosion) for major portions of these embankments. Large portions of these fill materials came from spoils dredged from the excavation of the adjacent MRGO channel, and the short-term savings achieved by the use of these soils now pale in comparison to the massive damages and loss of life that resulted. Because these levees eroded so rapidly, and so massively, the storm surge was able to push largely undiminished across a wide area of undeveloped swampland behind the main frontage levees, cross a lower secondary levee (the Forty Arpent levee) that has not been intended to have to face an undiminished rising storm surge, and then charged into the populated zones of St. Bernard Parish with catastrophic consequences.

Because it passed so quickly and so completely through the frontage levees, the surge filled the St. Bernard basin to an elevation of +12 feet above sea level; inundating homes and businesses located well above sea level that had expected to be safe, and inundating lower lying properties to great depths.

The use of intrinsically highly erodeable fills, especially clean sands, and the even more dangerous lightweight shell sands, should be reconsidered. The use of such materials as levee embankment fill, especially without taking appropriate measures to mitigate the erosional hazards associated with these (e.g.: sheetpile cutoff, erosion protection and armoring of exposed slope faces and crests, etc.) is inadvisable when constructing levees intended to protect large populations at risk.

The two large breaches at the east bank of the IHNC (at the west end of the Lower Ninth Ward) both appear to have resulted not from overtopping, but rather from underseepage beneath the inadequately deep sheetpile curtains at these two sections. Overall, four of the eight most significant failures (breaches) that occurred during hurricane Katrina (the eight breaches that caused the greatest damages and loss of life) appear to have been due to inadequate attention to underseepage during initial design, and resulting sheetpile curtains that were far too short as to suitably cut-off or minimize these underseepage flows (see also Sections 8.3.8 and 8.3.9). This appears to be a widespread problem throughout the New Orleans regional flood protection system; the entire system should be re-evaluated with respect to this potential hazard, and mitigation implemented as necessary.

6.5 References

- GEO-SLOPE/W (2004) "Complete Set of Manuals", John Krahn (Edit.), Calgary, Alberta, Canada.
- IPET – Interagency Performance Evaluation Task Force (2006) *Performance Evaluation Status and Interim Results*, Report 2 of a Series, Performance Evaluation of the New Orleans and Southeast Louisiana Hurricane Protection System, March 10, US Army Corps of Engineers.

EXHIBIT J

**UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF LOUISIANA**

***In re: KATRINA CANAL
BREACHES CONSOLIDATED LITIGATION***

CIVIL ACTION NO. 05-4182

VERSUS

SECTION "K"

Pertains to: All MRGO

***Judge Standwood R. Duval, Jr.
District Judge***

***Judge Joseph C. Wilkinson, Jr.
Magistrate 2***

RESPONSES TO SUBPOENA REQUIRING THE PRODUCTION OF DOCUMENTS

DATED NOVEMBER 18, 2007

NOW INTO COURT, in Proper Persona, comes a respondent, Melvin M.L. McElwee, Sr. pursuant to Federal Rule of Civil Procedure 45, who in response to Defendant Washington Group International, Inc. (hereinafter, "WGI") request of subpoena *duces tecum* (subpoena) being issued by the United States District Court for the Eastern District of Louisiana upon McElwee Brothers, Inc. (hereinafter, "McElwee Bros."). McElwee Bros. located at 14154 Rev. Joseph White Road, Independence, Louisiana 70443. The subpoena was received by Melvin M. L. McElwee, Jr. 14150 Rev. Joseph White Road, Independence, Louisiana 70443.

Respondent provides the following:

RESPONSE TO SPECIFICATIONS OF DOCUMENTS TO BE PRODUCED

NO. 1

Attached has exhibits A, B, C, D, and E. These documents are not all inclusive. McElwee Brothers, Inc. was not required and did not keep on file a complete list of communications held between it and any member of the Independent Levee Investigation Team.

NO. 2

McElwee Bros. has some photos that it is willing to email WGII upon it furnishing an electronic mailing address for receipt. McElwee Brothers, Inc. did not keep on file a complete list of documents provided to Professor Robert Bea (PhD, P.E.), of the University of California Berkeley, a purported member of the Independent Levee Investigation Team. Dr. Robert Bea is the best source for this information.

NO. 3

Please reference exhibits A, B, C, D, and E respectively, and exhibits F, G, and H. McElwee Bros., was also referred to a link to obtain a copy of the draft report, "Investigation of the Performance of the New Orleans Flood Protection Systems in Hurricane Katrina on August 29, 2005", completed by the Independent Investigation Team. McElwee Bros. is willing to email WGII upon it furnishing an electronic mailing address for receipt.

NO. 4

Please reference item number 2 above.

NO. 5

McElwee Bros. has not requested any documents with the Interagency Performance Evaluation Task Force. McElwee Bros. has no knowledge of sharing any documents with the Interagency Performance Evaluation Task Force.

NO. 6

McElwee Bros. has not conducted or attempted to conduct dewatering procedures along the Industrial Canal's east bank between Florida and Claiborne avenues. McElwee Bros. has conducted dewatering procedures along the Industrial Canal's east bank north of Florida and Claiborne avenues. McElwee Bros., **objects** to the production of documents associated with its dewatering procedure as a result of such request subjecting McElwee Bros.', director, officers, and employees to undue burden (labor, time, reproduction costs).

NO. 7

McElwee Bros. has not conducted or attempted to conduct excavation along the Industrial Canal's east bank between Florida and Claiborne avenues. McElwee Bros. has conducted excavations along the Industrial Canal's east bank north of Florida and Claiborne avenues. McElwee Bros., **objects** to the production of documents associated with its excavations as a result of such request subjecting McElwee Bros.', director, officers, and employees to undue burden (labor, time, reproduction costs).

NO. 8

McElwee Bros. has not reported under seepage, ponding, or pooling of waters along the Industrial Canal's east bank between Florida and Claiborne avenues. McElwee Bros. has reported under seepage, ponding, or pooling of waters along the Industrial Canal's east bank north of Florida and Claiborne avenues. McElwee Bros., **objects** to the production of documents associated with its excavations as a result of such request subjecting McElwee Bros., director, officers, and employees to undue burden (labor, time, reproduction costs).

NO. 9

McElwee Bros., have not made any efforts to remedy or otherwise limit under seepage, ponding, or pooling of waters along the Industrial Canal.

NO. 10

McElwee Bros., have not received any complaints or expressions of concern from residents of the Lower Ninth Ward and/or St. Bernard Parish neighborhoods concerning under seepage, ponding, or pooling of waters along the Industrial Canal.

NO. 11

McElwee Bros., has no documentation evidencing sink holes along the Industrial Canal.

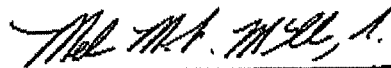
NO. 12

McElwee Bros., has no documentation reflecting the identities of any person or entity that has made or threatened to make a claim against it for any damage alleged to have been caused during Hurricane Katrina.

NO. 13

McElwee Bros., has no documentation reflecting the identities of any residents of the Lower Ninth Ward and/or St. Bernard Parish with whom it have settled or otherwise resolved litigation or anticipated litigation against it in connection with Hurricane Katrina.

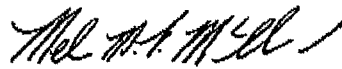
I PRAY THAT THIS COURT, will find that the defendant has completed the requirement of Federal Rule of Civil Procedure 45, and deem this information to be sufficient.



Melvin M. L. McElwee, Sr.
In Proper Persona
Director of McElwee Brothers, Inc.
P. O. Box 1410
14154 Rev. Joseph White Road
Independence, LA 70443
Telephone (985) 878-0280
Facsimile (985) 878-0064

CERTIFICATE OF SERVICE

I certify that a copy of the above "RESPONSES TO SUBPOENA REQUIRING THE PRODUCTION OF DOCUMENTS DATED NOVEMBER 18, 2007" has been facsimiled to all counsel of record on this 19th day of December 2007.



Melvin M. L. McElwee, Sr.
In Proper Persona

EXHIBIT K

RE: you are invited

Page 1 of 3

Melvin M. L. McElwee, Sr.

From: Robert Bea [bea@ce.berkeley.edu]
Sent: Thursday, June 22, 2006 12:24 PM
To: Melvin M. L. McElwee, Sr.
Subject: RE: you are invited

Hi Melvin,

you can access our report at:

www.ce.berkeley.edu/~new_orleans

(no underline under 'orleans')

more developing on going forward.

thanks for your help.

bob

Thanks for the invitation. Sorry I was out of town during the week of May 21, 2006.

Is it possible to that I may receive a copy of the report, at our mailing address which is P. O. Box 1410, Independence, LA 70443.

I still haven't received any of your attachments on your last email correspondence.

Again, thanks for the invitation, and if there is anything else I can help with, let me now.

-----Original Message-----

From: Robert Bea [mailto:bea@ce.berkeley.edu]
Sent: Wednesday, May 17, 2006 10:42 AM
To: Melvin M. L. McElwee, Sr.
Subject: you are invited

Announcement

You are invited to attend

6/23/2006

Exhibit "C"
page 1 of 2

RE: you are invited

Page 2 of 3

The National Science Foundation
Independent Levee Investigative Team
(Dr. Bob Bea)
(Dr. Ray Seed)
And many Other Volunteers
Will present their report on Katrina
Levee Failures

May 22nd, 2006

9:00 A.M. to 12:00 Noon

Sheraton New Orleans Hotel
500 Canal Street
New Orleans, Louisiana 70130

Grand Ballroom
5th Floor

Please feel free to invite anyone who is interested in attending.

i think we got it put together correctly. thanks for your help. but, it is not over - only started.

bob

--

Professor Robert Bea (PhD, PE)
212 McLaughlin Hall
University of California
Berkeley, CA 94720-1710
Telephone (510) 642-0967
Telefax (510) 643-8919

Home Office
60 Shuey Drive
Moraga, CA 94556
Telephone (925) 631-1587
Telefax (925) 631-1587
Cell (925) 699-3503

--

Professor Robert Bea (PhD, PE)
212 McLaughlin Hall
University of California

Exhibit "C"
page 2 of 2

6/23/2006

EXHIBIT L

1 CHARLES F. ROBINSON #113197
2 CHRISTOPHER M. PATTI #118283
3 University of California
4 Office of the General Counsel
5 1111 Franklin Street, 8th Floor
6 Oakland, CA 94607-5200
7 Telephone: 510-987-9800
8 Facsimile: 510-987-9757

9 Attorneys for

10 THE UNIVERSITY OF CALIFORNIA AT
11 BERKELEY CENTER FOR INFORMATION
12 TECHNOLOGY RESEARCH IN THE INTEREST
13 OF SOCIETY

14 UNITED STATES DISTRICT COURT
15 NORTHERN DISTRICT OF CALIFORNIA

16 **IN RE: KATRINA CANAL
17 BREACHES CONSOLIDATED
18 LITIGATION**

19 Case No. MISC. NO. 08-CV-80007MISC
20 (PJH)

21 **DECLARATION OF RAYMOND B. SEED**

22 Date: March 12, 2008
23 Time: 9:00 a.m.
24 Courtroom: 3, 17th Floor
25 Judge: Hon. Phyllis J. Hamilton

26 I, Raymond B. Seed, declare as follows:

27 1. I am a Professor of GeoEngineering at the University of California at
28 Berkeley. I have personal knowledge of the matters set forth in this Declaration and could
competently testify to them if called as a witness.

29 2. I served as the head of the Independent Levee Investigation Team ("ILIT"),
30 team of engineers and researchers formed to investigate the performance of the New Orleans
31 regional flood protection system during and after Hurricane Katrina. Although the team was led
32 by me, included a number of U.C. Berkeley personnel, and received some technical and logistical
33 support from our departments, it was not a U.C. Berkeley entity. The team included members
34 from six states, from a number of universities, private engineering firms, and state and federal
35 agencies. Excepting a few graduate student members who received compensation for their ILIT

36 DECLARATION OF RAYMOND B.
37 SEED

1 work, team members worked on ILIT in their individual capacity on a voluntary, pro bono basis.
2 Although some members of the team continue to perform related work, ILIT completed its formal
3 investigations and disbanded upon completion of its Report in 2006. The only ILIT related
4 activity since then has been the preparation of a series of papers for the ASCE Journal of
5 Geotechnical and Geoenvironmental Engineering; these document the initial studies and also take
6 some advantage of follow-on work performed by some of the original team members.

7 3. The Center for Technology Research in the Interest of Society ("CITRIS")
8 at the University of California at Berkeley focuses on creation of information technology
9 solutions for social, environmental and healthcare problems. It also provides funding for
10 research. CITRIS's only connection to the ILIT is that CITRIS provided approximately \$50,000
11 in funding for the Team's study. In contrast, the National Science Foundation provided about
12 \$230,000 in funding for ILIT's work. None of ILIT's members were members of or affiliated
13 with CITRIS. CITRIS was not involved in ILIT's research work. I have reviewed the subpoena
14 served on CITRIS in November 2007. The ILIT did not provide CITRIS with any of the
15 materials called for by the subpoena.

16 I swear under penalty of perjury that the foregoing is true and correct. Executed on
17 February 18, 2008, at Berkeley, California.

18
19
20 

21 _____
Raymond B. Seed

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23
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25
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27
28
DECLARATION OF RAYMOND B.
SEED